RESEARCH PROJECT :

PREDICTIVE VALUE OF MATRICULATION EXAMINATION OF PANJAB UNIVERSITY

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FOREWORD

The unprecedented expansion in education and distressingly large number of failures in the University Examinations are matters of great concern to every one engaged in education. Examination reform has become a major problem in the task of improvement of education. Various bodies are taking steps to effect improvement ~~of~~ in the system of Examination. It is also being realised that admission to the University should be restricted and confined to those who can really benefit from ~~the~~ higher education. Matriculation Examination is an Entrance Examination to the University. Therefore it is worthwhile to investigate the value of the scores of Matriculation for admission purposes.

The present study "Predictive Value of Matriculation Examination of Panjab University" was taken up with a view to find out the predictive potentiality of the marks of Matriculation Examination and the weightage to be given to them for admission to higher courses. The National Council of Educational Research & Training was kind enough to sanction this Research Project to our College.

The ensuing pages present the Report of the Project "Predictive Value of the Matriculation Examination of the Panjab University". Though it is a limited study, yet its findings will ~~imp~~ prove valuable to those interested in the improvement of education by giving only due weightage to the Matriculation Examination for the entry into the higher courses and professions.

My grateful thanks are due to Dr. M.B.Buch, Deputy Director, and Shri Praphulla Patel, Assistant Psychometrician, Directorate of Extension Programmes for Secondary Education, Delhi, for giving continuous guidance to the Research Assistants throughout the investigation.

P.T.O.

I thank the Panjab University authorities for providing facilities for collecting data from their office record for the Research Project.

DHARM BIR.

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INTRODUCTION.

Since the advent of Independence there has been an appreciabl expansion in the field of education in India. Every year more and more students are entering the Higher Secondary Schools, with a corresponding increase in the number of students in the Colleges. This vast and rapid increase in the number of students has reacted unfavourably on the Examination standards of the University and this is hardly a matter of debate. This is quite evident from the alarming rate of failures in the University Examinations.

The large number of failures at the University Examinations has become a matter of concern of the Educationists, teachers, parents and public in general. In a well organised system of education, where education is linked with the standard of education, it would be justifiable to expect that the rate of failures should not be more than 10 per cent. When it is 50 per cent or more as at present in certain Indian Universities, attention is required to effect some radical reforms in the system of Examinations. The problem becomes more intense when we find that the failures are more at College stage than at the School stage.

The question arises why there is so many failures at University stage, as compared with the High School stage. Many hypothesis have been put forward in this connection. Some relate the high rate of failures to the mood of the Examiners, others with the activities at playgrounds, thrill of the movies, economic fluctuation of the family and still others regard the education imparted at the school stage as not complete in itself and thus a significant cause for the high

rate

rate of failure at the College stage.

With the introduction of compulsory primary education, pressure on High School and College Education is increasing and still more pressure is expected. The liberal admission of pupils to College education is likely to result in lowering the standard of the College education, but as long as avenues of employment on technical education are not opened, it will not be responsible to refuse admission to many who come to seek College education, and leave them on the road at a critical stage of life. The growing complexity of our civilization is putting an increasing pressure on the individual to fit himself in the role of skilled worker in his daily life. This changed aim of education for the vocation is now evident at all levels of education. It is an admitted fact that the well being of the present day community depends upon the maximum development and use of the abilities of all its people.

India is passing through a developing economy. We have, thus scanty of resources at our disposal to meet the present day need of the education. We must see that the public money is spent on only those individuals who are likely to benefit from the University education. It is also essential to avoid the wasted efforts that would result if University teachers were burdened with unsuitable and ill-prepared students.

It is a general complaint by the College teachers that many students, admitted to the College, are in fact insufficiently prepared or ill-suited for University studies. It has been noticed that about 30 per cent of the students in Matriculation examination, about 60 per cent in the Intermediate Examination and 65 per cent in the Degree Examination of the Panjab University fail every year. This huge failure means a

great financial loss not only to the students but nation as well.

Mr. G.C. Chatterji, the great Educationist and a member of the Union Public Service Commission, once remarked, "The effect of partition of the country on education standards has never been correctly assessed. No doubt the effect on the territories which were actually divided and suffered wholesale slaughter was far more serious than on those which remained unaffected by these grim happenings. In Punjab, all educational buildings had to be converted into refugee camps and teachers and students were given what were called Social Service Degrees and even when the examinations were restored the standard had to be softened down in order to enhance the number of successes.' He has summed up the position of Panjab University and thus has pictured the functioning of the University during its first few years. When the University established its roots, it raised the standard at the College stage, which is self-evident from the increased rate in failures in various examinations of the University.

Almost every year the reports of some examinations have revealed the immaturity, the lack of ability and inadequate schooling of their students and every year the newspapers make a feature of such criticism . More recently anxiety has been expressed about the proportion of the students who failed in the Intermediate examination of the Panjab University. On more than one occasion the question has been raised, whether the majority of the students who fail should have been in the University at all. A widely shared conviction of the University teachers has always been that poor work in the University is closely related to the quality of the

school education and to the entrance policy of the Colleges. Referring to the complaints of the poor standard of work done by the students at the College stage, the editorial of a leading newspaper made the following comments.

> "For what is nature of the failure ? It is simply that a proportion and excessive proportion of the students entering the College from the School are not educationally equipped to enter it. This shows that the main cause of poor performance in College operates from the stage of Matriculation and earlier, and are related to the inadequacy of the School education and the scholastic qualifications of the students who are permitted to enter the College and that something is very wrong with an entrance standard that allows such students to take up College studies."

The causes of increase in the rate of failures at the College stage range from the social and financial to the administrative and academic. To make an enquiry into the causes of failure at College Stage requires patient research and the inference thus drawn should be used for building up structure which may be devoid of such lapses. Some opine that the College teacher has made the education system at school level scapegoat for the poor performance of their students at the College stage. They hold the idea that Matriculation Examination which is regarded as the passport for College education does not assess the potentialities of the students for receiving the College education. In other words they say that Matriculation Examination does not predict the students' latent abilities for persuing higher

education.

education. They say that there is little relationship between the marks obtained by a candidate in the Matriculation Examination with that of the Intermediate and Degree Examinations. The evil can be removed by proper classification of the pupils on the basis of their abilities and aptitude for receiving higher education. This will save much effort which is made for the students who are a probable failure in the College. The whole discussion boils down to the fact that we should place some restrictions on the admission of the students in the Colleges.

The University Grant Commission Committee on the reform of the examination system has suggested the following four ways for solving such a ticklish problem of admission to the Colleges :

1. Use of special entrance tests as are taken by some professional institutions.
2. Use of cumulative records of the students at school.
3. Use of interview and viva voce tests.
4. Addition of one or two papers - designed to test students' mastery of the medium of instruction at the University, his intellectual maturity and his general interest to the school leaving examination.

These suggestions also sound a note of warning that the present criteria which is indiscriminately being used by almost all the Universities of India for giving admission to the College education is not satisfactory. The procedure which is at present in vogue in Colleges for granting admission to the students is on the basis of marks obtained by the students at Matriculation Examination.

The present study is to assess :

(1) Value of Matriculation Examination of the Panjab University

(2) Whether the criteria for giving admission to the students in the Colleges on the basis of their Matriculation result is appropriate or not.

(3) Whether we can forecast the students' performance at Intermediate and Degree Examination, from ~~[illegible]~~ their performances at Matriculation Examination or not.

In this investigation an attempt has been made to determin the extent to which the relationship exists between the students' achievement in Matriculation and Intermediate Examinations, Matriculation and Degree Examinations, and between Intermediate and Degree Examinations. An approach is being made here to explain the relationship thus derived.

CHAPTER 2.

ANALYSIS OF THE PROBLEM.

The Major question in this study is to what extent may we rely upon the Matriculation marks as a base for admitting students to the College education. The question calls for a judgment with respect to the effectiveness of the Matriculation marks. To make such a judgment and to prove the effectiveness requires some standard against which comparison of Matriculation marks can be made. This leads to an idea, of finding a criterion with which we can make a reasonable comparison between the marks obtained in the Matriculation Examination and those obtained at the higher levels.

The most appropriate and easily available criterion would be that which measure directly the students achievement at an examination which is conducted by the same authority and at an interval of one or two years. In the present case Panjab University conducts Intermediate and Degree Examinations each at an interval of two years after the Matriculation Examination.

In these examinations two types of measures of student's achievement are available. The first type in each case is the total marks obtained by the student in all the subjects. By reducing these marks into percentages we can have an approximate idea of overall achievement of the students in the Intermediate and Degree Examinations.

The second type of measures are the marks obtained by the students in individual subjects at these examinations. The criteria of student's achievement in individual subjects will be more useful to us in understanding the strong and

weak points of the students' achievements.

Recognising the purpose and level of efficiency desired in this enquiry, both the criteria, total marks and individual subjects marks at the two Examinations have been used in the prediction of scores of Intermediate and Degree Examinations from the scores of the Matriculation Examination. In making a choice over the use of total marks or subjectwise marks, it is expected to be aware that the achievement in any course is a far more complex property than we assume it to be. The apparent belief has been duly reflected by the importance attached to grand total marks.

By recognising the importance of Grand Total marks as the true indicator of the student's achievement in the course of study, the following assumptions were adopted which have got great importance in the present study:-

1. Overall achievement is a single characteristic, which can be arranged on a scale from high to low.
2. What has been measured by marks is reliable.
3. The score in individual subjects are valid.

After considering the broad features of criteria and realising a need for thorough analysis of the criterion, we come to the point from which the criterion measure will be predicted. It is now an admitted fact that to avoid much risk in terms of students' failures in University Examination, it is necessary to enquire into the correlation of students' educational growth, which may be considered as dependent upon their ability to pursue their academic studies and upon their performances in the Matriculation Examination.

To find a single predictor for predicting achievement at the College stage will be of little value, and the research

done so far in this direction has failed to achieve the end in view. The need, therefore, arose to find out a minimum number of independent predictors, which have direct bearing on the demands of the specific courses in terms of levels of abilities, past educational experiences and other so called non-academic factors, such as motivations, interest, study habits or skills, personality, social adjustment and educational aspirations of the students. The present study is directed to find out the maximum number of subjects of Matriculation examination which can be used as dependable predictives in determining the academic achievements of the students in College education.

The main consideration for finding out the maximum number of predictors and their multipal relationship will be to determine some measure by which we can spot out the probable failures at the time of admission to the College and thus save the students and the Society from the pangs of frustration which are shown by them at the time of results.

CHAPTER 3.

THE PLAN OF INQUIRY.

In the present Chapter, the procedure adopted for the study of this problem is discussed. The central idea of the study is to find if there is any relationship among the performances of a particular candidate at Matriculation, Intermediate and Degree Examinations, or in other words to make an attempt here to find if the achievement of the student in his Matriculation Examination has any bearing upon his achievements at the other two examinations i.e. Intermediate and Degree. This shows that the Matriculation Examination is the main spring for our inquiry.

Here we shall describe in brief the general procedure we have adopted for the selection of the Examinations, years, conditions for passing the Examination, sample of the candidates, collection of Marks, categorising the students, grouping the students on the basis of subjects and description of the variables.

(1) Selection of Examinations.

The very name of the Project suggests that it concerns with the Matriculation Examination of the Panjab University. While analysing the problem it was laid down that for predicting we need a criterion. In this study, Matriculation Examinations are the criteria.

The following three successive Examinations of the Panjab University have been taken into consideration for this study :

Matriculation	March 1959
Intermediate	April 1961
Degree	April 1963.

which degree

We took the Degree Examination of April 1963, as it was the latest Degree Examination conducted by the Panjab University. It was easy to collect data concerning these examinations, as we have to follow up the same students from the Matriculation Examination to the Degree Examination. If we had taken the Matriculation Examination as the base for collecting data, the follow-up of the students at Intermediate and Degree Examinations would have become a cumbersome process. In order to avoid any pitfall, we took Degree Examination held in April 1963, as the base year for our Inquiry. We have followed back to the Intermediate Examination of 1 961, and Matriculation Examination of 1959.

(2) Examination Subjects.

Having decided the specific examinations and the years, the next step is to specify the subjects to be investigated at these Examinations. It was decided to take up these subjects for detailed investigation, which were common at the three examinations i.e. Matriculation, Intermediate and Degree.* Among these common subjects, a further selection was made with regard to the number of the students who offered them. Before taking up the selection of the common subjects at three examinations it is desirable to have a full idea of the scheme of the subjects at these examinations.

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* Panjab University, Chandigarh, Calendar 1961, Volume I & II.

Scheme of the subjects at Matriculation Examination.

Matriculation Examination is held once a year. For the Examination of ~~19xx~~ 1959, a candidate was required to offer five subjects as follows :-

(a) Compulsory Subjects		Marks	Pass Percentage
(i)	English or Modern Indian Language i.e. Hindi, Panjabi, Urdu and Bengali	200	33 %
(ii)	Mathematics or in case of girls Arithmetic and Household Accounts	200	33 %
(iii)	History and Geography	150	33 %
(b) Elective Subjects (any two of the following)			
(i)	Modern Indian Language, Urdu, Hindi, Panjabi or Bengali or French or German	150	33 %
(ii)	A classical language, Sanskrit, Persian, Arabic, Hebrew, Latin	150	33 %
(iii)	Physics and Chemistry (Two written papers and a Practical)	150	33 %
(iv)	Physiology and Hygiene (2 written. papers & Practical) ~~xxx~~ Or Domestic Economy(for Girl candidates only)	150	33 %
(v)	Agriculture or Animal Husbandry (Two written papers and a Practical)	150	33 %
(vi)	Drawing	150	33 %
(vii)	Civics & Hygiene (Two written papers and a Practical)	150	33 %

(P.T.O.)

Condition for passing the Matriculation Examination.

To qualify the Matriculation Examination a candidate must pass in English and Mathematics, or in case of girls Arithmetic and Household Accounts, and any two of the remaining subjects.

The minimum number of marks required to pass the Matriculation Examination are as under :-

(1) For all subjects, excluding Science subjects - 33 %	
(2) For Science subjects, excluding Domestic Economy	1. 33 % in written paper. 2. 25 % in Practicals. 3. 33 % in the aggregate, of written and Practical.
(3) Domestic Economy	1. 33 % in written paper. 2. 25 % in PaperB Practical. 3. 33 % in the aggregate, of written and Practical.

INTERMEDIATE.

The Intermediate Examination in Arts and Science is held twice a year in the month of April and September. For the Arts Faculty of Intermediate Examination of April 1961, following is the scheme of subjects. Each candidate is required to take up four subjects as follows :-

(a) Compulsory

(1) English

(2) A Classical Language, Sanskrit, Persian, Arabic, Hebrew, Greek or Latin.

OR

Hindi or Panjabi or Urdu or French or German.

(b) Elective (Any two of the following subjects)

1. Economics
2. Philosophy
3. History
4. Elementary Political Science and Civics.
5. Mathematics
6. Geography
7. Music
8. Arts
9. Home Science (For women only)
10. Physics
11. Chemistry
12. Biology
13. Geology
14. Agriculture.
15. Hindi, Panjabi, Urdu or Bengali.

Provided that

1. Home Science shall only be taken by such women candidates who are either on the rolls of an institution approved by the Syndicate for this examination or have already completed the course in this subject in such an institution.

2. Chemistry shall only ~~by~~ be taken by a candidate taking up Physics or Agriculture as one of the subjects.

3. Hindi or Panjabi or Urdu or Bengali shall only be taken by a candidate who has taken up Sanskrit, Persian or Arabic as his Second Compulsory subject.

A candidate may also take up any one of the following as an additional Optional subject for the examination :-

1. A Modern Indian Language, Hindi, Panjabi, Urdu, Bengali or Tamil.
2. French.
3. German.
4. Military Training.

In the Science Faculty of the Intermediate Examination following is the Scheme of Subjects :-

(a) Compulsory

1. English.

(b) Elective (Any three of the following) :-

1. Physics
2. Chemistry
3. Mathematics
4. Biology
5. Physiology
6. Geology
7. Agriculture
8. Geography.

Provided that

Biology and Physiology or Biology and Agriculture shall not be allowed in any group of subjects and students who have taken up Mathematics as one of the subjects shall not be allowed to attempt question on Mathematics in the Physics paper.

The grouping of subjects for the Medical Faculty shall be Physics, Chemistry and Biology.

A candidate can also take up any one of the following as Additional Optional subjects for the Examination :-

1. A Modern Indian Language (Hindi, Panjabi, Urdu, Bengali or Tamil).
2. French.

3. German.

4. Military Training.

CONDITIONS FOR PASSING THE INTERMEDIATE EXAMINATION.

The marks allotted to each subject are one hundred and fifty, except in the case of Additional Optional subject, for which the marks shall be fifty only.

The minimum number of marks required to pass the examination are 33 % in each subject, provided that in each subject including Geography and Music, this percentage shall be required separately in Written and Practical (Map work in Geography) parts of Examination. Provided further that a candidate who appeared in the Examination in one and the same session and fails in one or more subjects by not more than 3 marks, shall be given upto 3 marks to make up the deficiency and shall be declared to have passed the examination.

A candidate does not receive any credit for marks obtained in the additional Optional subject unless he has obtained at least thirty three per cent, in which case these marks shall be added to the total.

A candidate who obtains forty per cent of the aggregate number of marks in the compulsory and elective subjects, and has failed in one subject only, obtaining not less than twenty five per cent marks, is admitted to the subsequent examination or examinations in that subject, and if he passes in the said subject, he shall be deemed to have passed the Intermediate Examination.

DEGREE.

The Examinations for the Degree of Bachelor of Arts and Bachelor of Science is held twice a year in the months of April and September.

A candidate for the B.A. Examination is required to take up three subjects of which one is English and the other two subjects are out of the following :-

1. A Classical language (Sanskrit, Persian, Arabic, Hebrew, Greek, Latin, French or German).
2. History.
3. Political Science.
4. Philosophy.
5. Economics.
6. A course of Mathematics.
7. B Course of Mathematics.
8. Sociology and Public Administration.
9. Physics or Chemistry or Geology or Botany or Zoology or Geography.
10. Astronomy.
11. Home Science (For Women only).
12. Music.
13. Arts.
14. Hindi, Panjabi or Urdu.
15. Indian Culture.

A candidate can also take up any of the following as Additional Optional Subject for the examination :-

1. Modern Indian Language (Hindi, Panjabi, Urdu, Bengalee or Tamil).
2. French or German.
3. Military Training.

A candidate for B.Sc. Examination is required to take up any one of the combination of three subjects given below:-

1. Botany, Zoology and Chemistry.
2. Botany, Zoology and Geology.
3. Botany, Zoology and Physics.
4. Botany, Zoology and Geography.
5. Botany, Zoology and Physiology.
6. Botany, Zoology and Human Anatomy.
7. Botany, Zoology and Mathematics.
8. Botany, Geology and Chemistry.
9. Botany, Geology and Geography.
10. Botany, Geology and Physics.
11. Botany, Geography and Chemistry.
12. Botany, Chemistry and Physics.
13. Botany, Chemistry and Mathematics.
14. Chemistry, Physics and Geology.
15. Chemistry, Physics and Mathematics.
16. Botany, Physics and Mathematics.
17. Chemistry, Physics and Geography.
18. Chemistry, Physics and Astronomy.
19. Chemistry, Geology and Geography.
20. Mathematics, Astronomy and Geography.
21. Mathematics, Astronomy and Geology.
22. Mathematics, Astronomy and Physics.
23. Mathematics, Geography and Geology.
24. Mathematics, Physics and Geology.
25. Mathematics, Chemistry and Geology.
26. Mathematics, Geography and Physics.
27. Mathematics, Physics and Zoology.
28. Geography, Physics and Geology.
29. Geography, Physics and Astronomy.
30. Human Anatomy, Physiology and Bio-Chemistry.

A candidate for the B.Sc. Examination shall offer English as an Additional Optional Subject.

The marks allotted to each subject are one hundred and fifty, except in case of Additional Optional Subject, for which the marks shall be fifty only.

The marks minimum to pass the examination of Degree are as follows :-

B.A.

i) 33 % in each subject, except in Physics, Chemistry, Geology, Botany, Astronomy, Zoology, Geography, Home Science and Music. This percentage is required separately in the written and practical examinations (including Map work in the case of Geography).

ii) 40 % of the aggregate.

B.Sc.

i) 33 % in each subject, provided that this percentage is required separately in the written and practical Examinations, including Map work in the case of Geography.

ii) 40 % in the aggregate.

Total Marks and Subjects in the Examinations :

Total Marks in each examination along with number of subjects are as follows :-

Examination	No. of subjects Compulsory subjects	 Optional subjects	Total No. of Marks
Matriculation	5	-	850
Intermediate	~~xx~~ 4	1	650
Degree	3	1	500

3. Compo- tion of Sample

This study is mainly concerned with performances of

students at the Matriculation, Intermediate and Degree Examinations. Thus it was necessary to include only those students in the sample, whose results at the three examinations (Matriculation, Intermediate and Degree) could be obtained easily.

In Panjab University, there are two categories of students in the Degree Examination - the students who appeared in the Degree Examination as Private candidates (this includes those who have passed the Intermediate Examination after passing any Honour Examination in Modern Indian Languages, or appearing as Late College Students, or in the capacity of working teachers and Librarians etc. or Women candidates) and those who appeared in the Examination as Regular College Students. In this study, we have taken the latter category. In this category too, we have selected only those students, who would have probably passed the Matriculation Examination in year 1959 and must have got their registration number in the same year.

Taking this criteria as a base, 4442 students who passed the Degree Examination of April 1963 were taken for the purpose of investigation. The registration numbers of these students along with the Roll Nos. of their Degree Examination, were noted on the proforma, which was designed to collect the necessary data (proforma attached in the Appendix B). From the registration No., their academic record in the University was consulted, and the Roll Nos. under which they appeared in Matriculation and Intermediate Examinations were noted on the prescribed proforma. These students were further split up into the following categories:

1. Number of students who passed their Matriculation Examination in 1959, and had their registration No. in the same year 3274
2. No. of the students who passed their Matriculation Examination before 1959, but had their registration No. in the Panjab University in 1959 572
3. Number of students who passed their Matriculation Examination from the Universities other than the Panjab University 487
4. Number of students whose cases were not traceable due to defective registration No. in the Degree Examination Result Gazette 109

The achievements of students in the first category have been taken into consideration for this study. The total marks and the marks of the individual subjects scored by 3274 candidates in each of the three examinations were noted on the prescribed proforma. This data was further categorised in the following three categories :-

Category No.	Particulars	No. of students.
1.	Candidates who appeared in the Degree Examination held in April 1963 after passing the Intermediate Examination held in April 1961	1615
2.	Candidates who failed in the Intermediate Examination held in April 1961, but passed the same in September 1961	575
3.	Candidates who changed their subjects either at Intermediate or at Degree Examination	1084
	Total	3274

In this study Categories No. 1 and 2 have been tak up for investigation and Category No. 3 has been deleted. The first category is the study of performance of the students for four years. The second category is the study of performance of students for two years, in which performance at Matriculation and Intermediate levels has been taken into consideration.

4. Grouping the Sample on the basis of subjects at the 3 Examinations.

The first Category has been grouped on the basis of subjects offered at Matriculation, Intermediate and Degree Examinations. The following table shows the subjects taken by the students in each group along with their numbers :-

Table No. 2.1.

Group No.	Matriculation	Intermediate	Degree	No. of students
1	(1) English (2) Mathematics (3) History & Geography (4) Physics & Chemistry (5) Drawing	English Chemistry Physics Mathematics	Chemistry Physics Mathematics	145
2	(1) English (2) Mathematics (3) History & Geography. (4) Physics & Chemistry. (5) Drawing.	English Chemistry Physics Mathematics	English Mathematics A Course Mathematics B Course	33
3	(1) English (2) Mathematics (3) History & Geography (4) Physics & Chemistry (5) Hindi.	English Chemistry Physics Mathematics	Chemistry Physics Mathematics	174

Group No.	Matriculation	Intermediate	Degree	No. of students
4	(1) English (2) Mathematics (3) History & Geography (4) Physics & Chemistry (5) Hindi.	English Chemistry Physics Mathematics	English Mathematics A Course Mathematics B Course	37
5	(1) English (2) Mathematics (3) History & Geography (4) Physics & Chemistry (5) Panjabi.	English Chemistry Physics Mathematics	Chemistry Physics Mathematics	27
6	(1) English (2) Mathematics (3) History & Geography (4) Physics & Chemistry (5) Sanskrit	English Chemistry Physics Mathematics	Chemistry Physics Mathematics	84
7	(1) English (2) Mathematics (3) History & Geography (4) Civics & Hygiene (5) Hindi.	English Economics Hindi	English Economics	60
8	(1) English (2) Mathematics (3) History & Geography (4) Civics & Hygiene. (5) Hindi.	English Civics Hindi	English Political Science	58
9	(1) English (2) Mathematics (3) History & Geography (4) Civics & Hygiene (5) Hindi.	English History Hindi	English History	47

Group No.	Matriculation	Intermediate	Degree	No. of students.
10	(1) English (2) Mathematics (3) History & Geography (4) Civics & Hygiene (5) Panjabi	English Economics Panjabi	English Economics	33
11	(1) English (2) Mathematics (3) History & Geography (4) Civics & Hygiene (5) Panjabi.	English Civics Panjabi	English Political Science	27
12	(1) English (2) Mathematics (3) History & Geography (4) Drawing (5) Hindi	English Economics Hindi	English Economics	26
13	(1) English (2) Mathematics (3) History & Geography (4) Hindi (5) Sanskrit	English Mathematics Sanskrit	English Mathematics A Course Mathematics B Course	24
14	(1) English (2) Mathematics (3) History & Geography (4) Hindi (5) Sanskrit	English Economics Sanskrit	English Economics	56
15	(1) English (2) Mathematics (3) History & Geography (4) Hindi (5) Sanskrit	English Civics Sanskrit	English Political-Science	32
16	(1) English (2) Arithmetic (3) History & Geography (4) Civics & Hygiene (5) Panjabi.	English Civics Panjabi	English Political Science	59 475

Group No.	Matriculation	Intermediate	Degree	No. of students.
17	(1) English (2) Arithmetic (3) History & Geography (4) Civics & Hygiene (5) Panjabi	English Economics Panjabi	English Economics	24
18	(1) English (2) Arithmetic (3) History & Geography (4) Civics & Hygiene (5) Panjabi	English History Panjabi	English History	45
19	(1) English (2) Arithmetic (3) History & Geography (4) Civics & Hygiene (5) ~~Panjabi~~ Hindi	English Economics Hindi	English Economics	76
20	(1) English (2) Arithmetic (3) History & Geography (4) Civics & Hygiene (5) Hindi	English Civics Hindi	English Political Science	131
21	(1) English (2) Arithmetic (3) History & Geography. (4) Civics & Hygiene (5) Hindi	English History Hindi	English History	84
22	(1) English (2) Arithmetic (3) History & Geography (4) Hindi (5) Sanskrit	English Sanskrit	English Sanskrit	64

1334

Only girl students at Matriculation Examination are allowed to take up Arithmetic as one of the compulsory subjects. The groups No. 16 to 22 are thus mainly of girl students.

There were a few more groups on the basis of subjects offered by the students at the three examinations, but only those groups of subjects have been included in our study which have been taken up by not less than twenty students.

In Category No.2, we have followed the students upto the Intermediate Examination. The following table will show the subjects taken by the students in each group along with the number of students who are taking the particular group of subjects upto Intermediate level :

Table No. 3.2.

Group No.	Matriculation	Intermediate	No.of students
1.	(1) English (2) Mathematics	English Mathematics	210
	(3) History & Geography	Chemistry	
	(4) Physics & Chemistry	Physics	
	(5) Drawing		
2.	(1) English	English	286
	(2) Mathematics	Mathematics	
	(3) History & Geography	Chemistry	
	(4) Physics & Chemistry	Physics	
	(5) Hindi.		

Group No.	Matriculation	Intermediate	No. of students.
3	(1) English	English	118
	(2) Mathematics	Economics	
	(3) History & Geo-graphy	Hindi	
	(4) Civics & Hygiene		
	(5) Hindi		
4	(1) English	English	110
	(2) Mathematics	Economics	
	(3) History & Geography.	Hindi	
	(4) Civics & Hygiene		
	(5) Hindi		
5.	(1) English	English	99
	(2) Mathematics	Civics	
	(3) History & Geography	Hindi	
	(4) Civics & Hygiene		
	(5) Hindi.		
6.	(1) English	English	62
	(2) Mathematics	Economics	
	(3) History & Geography	Panjabi	
	(4) Civics & Hygiene		
	(5) Panjabi		
7.	(1) English	English	49
	(2) Mathematics	Civics	
	(3) History & Geograp hy.	Panjabi	
	(4) Civics & Hygiene		934
	(5) Panjabi		

Group No.	Matriculation	Intermediate	No. of students
8.	(1) English	English	30
	(2) Mathematics	History	
	(3) History & Geography	Panjabi	
	(4) Civics & Hygiene		
	(5) Panjabi		
9.	(1) English	English	55
	(2) Mathematics	Civics	
	(3) History & Geography	Sanskrit	
	(4) Sanskrit		
	(5) Hindi.		
10.	(1) English	English	101
	(2) Mathematics	Economics	
	(3) History & Geography	Sanskrit	
	(4) Sanskrit		
	(5) Hindi		
11.	(1) English	English	84
	(2) Arithmetic & Household A/C	Civics	
	(3) History & Geography	Panjabi	
	(4) Civics & Hygiene		
	(5) Panjabi		
12.	(1) English	English	42
	(2) Arithmetic & Household A/C	Economics	
	(3) History & Geography	Panjabi	
	(4) Civics & Hygiene		
	(5) Panjabi.		

Group No.	Matriculation	Intermediate	No. of students
13.	(1) English	English	76
	(2) Arithmetic & Household A/c.	History	
	(3) History & Geography	Panjabi	
	(4) Civics & Hygiene		
	(5) Panjabi		
14.	(1) English	English	116
	(2) Arithmetic & Household A/c	Economics	
	(3) History & Geography	Hindi	
	(4) Civics & Hygiene		
	(5) Hindi.		
1 5.	(1) English	English	196
	(2) Arithmetic & Household A/C	Civics	
	(3) History & Geography	Hindi	
	(4) Civics & Hygiene		
	(5) Hindi.		
16.	(1) English	English	141
	(2) Arithmetic & Household A/c	History	
	(3) History & Geography	Hindi	
	(4) Civics & Hygiene		
	(5) Hindi.		
17.	(1) English	English	32
	(2) Arithmetic & Household A/c.	Sanskrit	
	(3) History & Geography		
	(4) Sanskrit		
	(5) Hindi.		

5. DESCRIPTION OF VARIABLES.

In the present study, we have included 10 subjects of Matriculation Examination, 10 subjects of Intermediate and 10 subjects of Degree Examination. These subjects are as under :-

	Matriculation	Intermediate.	Degree
1.	English	English	English
2.	Mathematics	Mathematics	Mathematics
3.	Arithmetic	Chemistry	Mathematics - A Course
4.	History & Geography	Physics	Mathematics - B Course
5.	Physics & Chemistry	Economics	Chemistry
6.	Civics & Hygiene	History	Physics
7.	Drawing	Political Science	Economics
8.	Sanskrit	Sanskrit	History
9.	Hindi	Hindi	Political Science
10.	Panjabi	Panjabi	Sanskrit

6. INDEPENDENT VARIABLES.

The ten independent variables for investigation in this study are the marks obtained by students in individual subjects at Matriculation Examination conducted by the Panjab University in March, 1959. Following is the description of these variables :-

Matriculation :

X_1. English. This is the percentage score obtained by a student in English paper out of the maximum obtainable score of 200.

X_2. Mathematics. This is the percentage score obtained by a student in Mathematics paper out of the maximum obtainable score of 200.

X3. Arithmetic. This is the percentage score obtained by a student out of the maximum marks of 200. (This subject is meant only for Girls).

X4. History & Geography. This is the percentage score obtained by a student out of the maximum marks of 150.

X5. Physics & Chemistry. This is the percentage score obtained by a student out of the maximum marks of 150.

X6. Civics & Hygiene. This is the percentage score obtained by a student out of the maximum marks of 150.

X7. Drawing. This is the percentage score obtained by a student out of the maximum marks of 150.

X8. Sanskrit. This is the percentage score obtained by a student out of the maximum marks of 150.

X9. Hindi. This is the percentage score obtained by a student out of the maximum marks of 150.

X10. Panjabi. This is the percentage score obtained by a student out of the maximum marks of 150.

XX. = GRAND TOTAL. This is the total percentage score obtained by a student out of the maximum marks of 850.

7. VARIABLES AT INTERMEDIATE EXAMINATION OF APRIL 1961.

Y1.	English.	This is the percentage score obtained by a student in English paper out of the maximum marks of 150.
Y2.	Mathematics.	This is the percentage score obtainable by a candidate in Mathematics paper out of the maximum of 150 marks.
Y3.	Chemistry.	This is the percentage score obtainable by a candidate in Chemistry paper out of the maximum marks of 150.
Y4.	Physics.	This is the percentage score obtainable by a candidate in Physics paper out of the maximum marks of 150.
Y5.	Economics.	This is the percentage score obtainable by a candidate in Economics paper out of the maximum marks of 150.
Y6.	History.	This is the percentage score obtainable by a candidate in History paper out of the maximum marks of 150.
Y7.	Civics.	This is a percentage score obtainable by a candidate in Civics paper out of the maximum marks of 150.
Y8.	Sanskrit.	This is the percentage score obtainable by a candidate in Sanskrit paper out of the maximum marks of 150.
Y9.	Hindi.	This is the percentage score obtainable by a candidate in Hindi paper out of the maximum marks of 1 50.
Y10.	Panjabi.	This is the percentage score obtainable by a candidate in Panjabi paper out of the maximum marks of 150.

EY. = GRAND TOTAL. This is the total percentage score obtainable by a candidate out of the maximum marks of 650.

8. VARIABLES AT DEGREE EXAMINATION OF APRIL, 1963.

Z1. English. This is the percentage score obtainable by a student in English paper out of the maximum marks of 150.

Z2. Mathematics. This is the percentage score obtainable by a candidate in Mathematics paper out of the maximum marks of 150.

Z3. Mathematics A Course. This is the percentage score obtainable by a candidate in Mathematics A course paper out of the maximum marks of 150.

Z4. Mathematics B Course. This is the percentage score obtainable by a candidate in Mathematics B Course paper out of the maximum marks of 150.

Z5. Chemistry. This is the percentage score obtainable by a candidate in Chemistry paper out of the maximum marks of 150.

Z6. Physics. This is the percentage score obtainable by a candidate in Physics paper out of the maximum marks of 150.

Z7. Economics. This is the percentage score obtainable by a candidate in Economics paper out of the maximum marks of 150.

Z8. History. This is the percentage score obtainable by a candidate in History paper out of the maximum marks of 150.

Z9. Political Science. This is the percentage score obtainable by a candidate in Political Science paper out of the maximum marks of 150.

Z10. Sanskrit. This is the percentage score obtainable by a candidate in Sanskrit paper out of the maximum marks of 150.

EZ. = GRAND TOTAL. This is the total percentage score obtainable by a candidate out of the maximum marks of 500.

PART I

A FOUR YEAR STUDY OF ACHIEVEMENTS OF THE STUDENTS AT MATRICULATION, INTERMEDIATE & DEGREE EXAMINATIONS.

CHAPTER 4.

MEAN ACHIEVEMENT AND VARIATION.

One of the most commonly used method of examining the relationship between one variable and another is to divide the whole data into groups in respect of one variable and compare the mean score of each group with that of the other groups. In the present study the whole data has been split up into various groups on the basis of subjects taken up by the candidate at Matriculation, Intermediate and Degree Examinations.

For the convenience of presentation, the statistical results are organised in the following nine Sections :-

1. Comparison of mean per cent achievement among subjects within groupsat Matriculation Examination.
2. Comparison of mean per cent achievement among subjects within groups at Intermediate Examination.
3. Comparison of mean per cent achievement among subjects within groups at Degree Examination.
4. Comparison of mean per cent achievement among groups within subjects at Matriculation Examination.
5. Comparison of mean per cent achievement among groups within subjects at Intermediate Examination.
6. Comparison of mean per cent achievement among groups within subjects at Degree Examination.
7. Comparison of mean per cent achievement between subjects at Matriculation and Intermediate Examinations.
8. Comparison of mean per cent achievement between subjects at Matriculation and Degree Examinations.
9. Comparison of mean per cent achievement between subjects at Intermediate and Degree Examinations.

Section No.1.

Comparison of mean percent achievement among groups within subjects at Matriculation Examination.

The table No. I - 1(a) in the Appendix shows the mean percent achievement in different subjects in different groups at the Matriculation Examination. The comparison of the mean percent achievement among the groups within subjects at Matriculation Examination can be done fairly well on the basis of the ranges of mean achievements in individual subjects, which are given in the table No.4.1.

Table No. 4.1.

Highest and lowest mean per cent achievements in individual subjects at Matriculation Examination for all the groups of Category No.1.

S.No.	Subjects	Limits		Range
		Upper	Lower	
1.	English	77.6	52.7	24.9
2.	Mathematics	96.8	62.3	34.5
3.	Arithmetic and Household A/C	72.0	68.0	4.0
4.	History and Geography	64.7	51.0	13.7
5.	Chemistry and Physics	74.5	64.6	9.9
6.	Civics and Hygiene	71.3	44.7	26.6
7.	Drawing	53.1	51.6	1.5
8.	Sanskrit	80.8	62.3	18.5
9.	Hindi	64.7	47.6	17.1
10.	Panjabi	69.2	59.3	9.9
EX	= TOTAL	78.5	52.6	25.9

When we compare the mean achievements of English in the total groups at the Matriculation Examination, we observe that the highest achievement is 77.6 percent and the lowest achievement is 52.7 percent. The difference between the two limits is 24.9 percent. This wide range among the performance of groups in English denotes that there is little ~~[illegible]~~ homogenity in the performance.

In the subject of Mathematics at Matriculation Examination, the highest achievement among the total groups is 96.8 per cent and the lowest achievement is 62.4 percent. The range is 34.5. Thus the variation is very high.

The highest performance of a particular group in Arithmetic and Household Accounts at Matriculation Examination is 72.0 per cent and the lowest is 68.0 per cent. There is a difference of only 4 percent. This shows that the groups are homogeneous in the achievement of Arithmetic and Household Accounts. The subject of Arithmetic and Household Accounts is taken up by girl candidates only. The relatively short range among the groups shows that the girls of different groups do put balanced efforts for the Arithmetic and Household Accounts.

The subject of History and Geography is one of the compulsory subjects at Matriculation Examination. The highest achievement in this subject is 64.7 percent and the lowest is 51.0 per cent. The range here is ~~only~~ 13.7, which shows that there is a significant variation.

The mean per cent achievement in Mathematics is

the highest among the three compulsory subjects of Matriculation Examination. This may be due to the fact that too much emphasis is laid on Mathematics at the Matriculation stage. The notable fact here is that the performance of the students who have pursued their studies upto Degree Examination is the highest in Mathematics at the Matriculation Examination. This leads us to the conclusion that achievement in Mathematics at Matriculation Examination depicts fairly well the probable performance of the students at Intermediate and Degree Examinations.

In the case of Chemistry and Physics, there is little difference between the highest and the lowest achievement. This shows that there is a homogenity in the achievements of these groups in this subject.

The subject of Civics and Hygiene has been taken up by girls more than boys at the Matriculation Examination. The highest limit 71.3 percent clearly indicates that the achievement in this subject is quite appreciable. The great difference of 26.6 per cent between the upper and the lower limits suggests that there is much variation in the achievement of this subject.

The subject of Drawing has been taken up by only three groups of students. The achievement in this subject is comparatively very low. Drawing is generally taken up by the students in combination with Science for the sake of getting admission into the Engineering profession. Here we are considering only those students who have pursued their studies upto Degree Examination as they could not get admission in any Engineering College. Thus we conclude that when the marks in Drawing are high in the case of the students

who have taken up Chemistry and Physics as an elective subject, it is presumed that he will achieve better marks in the Intermediate Examination, and that will help him in gaining entrance to any Engineering College, and the students who gain very low marks in Drawing are the sure case of showing poor achievements in the Intermediate and Degree Examinations. The students have nearly the same ability in the subject of Drawing as the range is very small.

The highest mean achievement in the subject of Sanskrit is 80.8 per cent. This subject has been taken up by the students of four groups. The highest achievement indicates that either the subject is very easy or the students taking this subject have great interest in the subject. It is a general feeling of the students as well as of the teachers that Sanskrit fetches more marks as compared with other subjects. Most of the students take this subject under the sway of this kind of feelings. There is a great variance among the average achievement in this subject of different groups, which gives the impression that there is little relationship among the achievement of different groups of this subject.

In the subject of Hindi at Matriculation Examination, the highest mean percent marks are 64.7 and the lowest is 47.0 per cent. This subject is not so popular with the students who have taken Physics and Chemistry as one of the Elective subjects at Matriculation Examination. Hindi is one of the regional languages of the Punjab. In the present study, low achievement in the subject suggests that there is some cause for this low achievement and

and needs thorough investigation. The long range in the achievement of the subject suggest that there is much variation.

Panjabi is another regional language of the Panjab. In the present study, only a few students have taken up Panjabi as one of the Elective subjects in the Matriculation Examination. This shows that students attach little importance to the learning of this language. Another thing which has come to our notice is that the number of girls is greater than the number of boys who have taken either Hindi or Punjabi as one of the Elective subjects in the Matriculation Examination. From the average achievement in the subject of Panjabi, each group shows that the range is comparatively less in this subject and thus shows its homogeneousness in the performance of the students as compared with Hindi.

The highest mean percent achievement in the grand total marks of Matriculation Examination is 78.0 % and the lowest are 52.6 %. This high range is the indicator of high variability in the total achievements.

To find out further if there exists any relationship among the achievements of different subjects at the Matriculation Examination, we shall compare their average achievements in all the groups. The following table will show the average achievements of the students in different subjects at the Matriculation Examination.

(Contd.)

Table No. 4.2.

Average Mean Percent achievements in different subjects of various groups at the Matriculation Examination.

No.	Subjects.	Average mean percent achievement.
1.	English	62.0
2.	Mathematics	78.2
3.	Arithmetic & Household A/C	60.1
4.	History & Geography	55.0
5.	Physics & Chemistry	67.7
6.	Civics & Hygiene	53.4
7.	Drawing	52.4
8.	Sanskrit	70.4
9.	Hindi	58.5
10.	Panjabi	64.5
[illegible]	EX = Total	62.2

The highest average mean percent achievement of 78.2 marks is in the subject of Mathematics and the lowest 52.3 marks is in the subject of Drawing. The average mean per cent achievements in other subjects varies between these two limits. The Figure No.1 shows this fact clearly. It is thus evident that the achievement in different subjects at Matriculation Examination are comparable and bears certain relationship with each other, which will be studied in full details in the next Chapter.

Section No.2.

Comparison of mean per cent achievements among groups within subjects at Intermediate Examination.

Table No. I - 2(a) of Appendix A gives the mean percent achievements of different subjects in various groups.

From this we derive the following Table No. 4.3, which shows the range with upper and lower limits of the mean achievements in individual subjects for all the groups at the Intermediate Examination in Category No.1.

Table No. 4.3.

The Range in the mean achievements in individual subjects at Intermediate Examination in Category No.1.

S.No.	Subjects	Limits		Range
		Upper	Lower	
1.	English	43.2	33.1	10.1
2.	Mathematics	74.1	63.2	11.1
3.	Chemistry	66.4	52.3	14.1
4.	Physics	58.2	49.4	8.8
5.	Economics	47.2	40.1	7.1
6.	History	47.0	43.2	3.8
7.	Civics & Elementary Political Science	53.6	42.0	11.6
8.	Sanskrit	68.1	63.2	4.9
9.	Hindi	51.7	45.5	6.2
10.	Panjabi	49.3	47.3	2.0
EY. =	Total	60.8	40.3	20.5

The highest mean percent achievement for English is 43.2 and the lowest is 33.1. English is a compulsory subject at Intermediate Examination. It attracts the major attention of the students. They put more labour in this subject. The low achievement in this subject is the evidence to the effect that something is wrong either with the students' ability to learn the English language or with the methods of teaching English at the

College

College stage. Some are of the opinion that poor achievement in English at Intermediate Examination is due to the wide difference of standards between the Intermediate English and Matriculation English. To find out the cause and effect of this phemomena is not in the perview of this study.

The highest mean percent achievement of the students in Mathematics at the Intermediate Examination shows that this is the subject in which the students get maximum marks. The range between the two limits is significantly high, which means that there is a great variation in the achievement of the students in this subject.

The highest achievement in the subject of Chemistry is 66.4 percent and the lowest achievement is 52.3 percent. The very high percentage of achievement in this subjedt is due to the fact that the students have already offered this subject at the Matriculation Examination and thus have shown remarkable success in the subject of Chemistry at Intermediate Examination. Moreover, the students who are taking this subject intend to seek admission to some Engineering or Medical College where high percentage of marks is needed, for admission.

The achievements in the subject of Physics confirm our hypothesis which we have formed on the basis of achievements in Chemistry. It also requires a special mention here that the marks obtained by the students in practicals are generally very high, which affects the total marks.

In the subject of Economics the highest achievement is 47.2 per cent and 40.1 per cent is the lowest. There is little variation among the achievement of this subject. The very low achievement is a cause of concern. This poor

achievement

achievement indicates that students who take up Art subjects in their Intermediate Examination are poor achievers as compared with the students who offer Science subjects. There is a general feeling of the students that Economics is a difficult subject and they have to mug up lots of figures in this subject. This complaint does not seem to carry any weight. The defect lies with the capacity of the students who are to learn the subject. The students generally depend upon the made easy and cheap notes rather than the standard books.

In the subject of History the highest mean per cent achievement is 47.0 per cent and the lowest is 43.2 per cent. This reletively short range suggests that the students have nearly the same ability in this subject. The students have read this subject throughout their High Schools, but when their performance at College stage is so low, it is surely a problem for thorough investigation.

The highest achievement in Civics and Elementary Political Science is 53.6 per cent, and the lowest is 42.0 per cent. The mean achievement in this subject is considerably high, as compared with other Social Science subjects. Most of the students give p reference to the study of this subject, at the Intermediate Examination, and thus their performances are high.

The highest achievement in Sanskrit is 68.1 per cent. and the lowest one is 63.1 per cent. In the Matriculation Examination, we have observed that achievement in Sanskrit is quite high. Here also the achievement in this subject is quite good, which gives weight to our previous observation that Sanskrit is a subject which fetches more marks.

The

The highest achievement in Hindi is 51.7 and the lowest is 45.5 per cent. This achievement is very low. It seems that at the Intermediate Examination too students pay little attention to the xxxxx improvement of their Vernacular language. This poor performance in Hindi also influences the performance in English, which is the poorest among the subjects at Intermediate examination.

In the Punjabi subject also, the performance does not show any improvement. Its highest limit is 49.3 and the lowest limit is 47.2 per cent. No doubt this shows that they have a high relationship among themselves, but it also reflects that students do not give their full attention to this subject.

The highest mean per cent achievement in the grand total of Intermediate marks is 60.8 per cent, and the lowest is 40.3 per cent. This largeness in range shows that there is little homogenity among the grand total achievements of different groups in Intermediate Examination.

In the foregoing discussion we have seen that some relationship is present among the groups within the subjects. To support our conclusion further, we shall compare the average achievements of the subjects for all the groups in the Intermediate Examination. The following table will show the average performances of the students in different subjects at Intermediate Examination.

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Table No.4.4

Average achievement in percentage of the students in different subjects at Intermediate Examination.

No.	Subject	Average achievement.
1.	English	40.0
2.	Mathematics	66.6
3.	Chemistry	57.4
4.	Physics	52.8
5.	Economics	43.7
6.	History	45.0
7.	Civics & Elementary Political Science	46.0
8.	Sanskrit	45.5
9.	Hindi	48.6
10.	Panjabi	48.1
EY	TOTAL	48.2

The highest mean percent achievement of 66.6 percent is in the subject of Mathematics and the lowest of 40.0 percent is in the subject of English. The other average mean achievements vary between these two limits. The table No. 4.4 shows that the variation among the average achievement in different subjects is not very high. Thus ~~ix~~ it is evident that the achievement in various subjects at the Intermediate Examination bears a certain relationship with each other, which will be discussed in the following chapters.

3. Comparison of mean percent achievement among groups within subjects at DEGREE Examination.

Table No. ~~xxxxx~~ I - 3 (a) of the Appendix A shows the mean per cent achievement in different subjects in different groups at the Degree Examination. From this table

we derive the table No.4.5 showing the range of the mean achievements of individual subjects for all the groups in Category No.1.

Table No. 4.5

The upper and the lower limits in each subject of the Degree Examination for all the groups in Category No.1.

S.No.	Subject	Limits		Range
		Upper	Lower	
1.	English	41.6	33.4	8.2
2.	Mathematics	65.1	55.4	9.7
3.	Mathematics A course	59.3 ~~42x3~~	58.4	0.9
4.	Mathematics B. Course	46.4	44.2	2.2
5.	Chemistry	60.0	47.4	12.6
6.	Physics	52.9	45.7	7.2
7.	Economics	45.2	41.1	4.1
8.	History	49.0	43.5	5.5
9.	Political Science	42.3	39.4	2.9
10.	Sanskrit	51.6	-	-
EZ	TOTAL	56.5	39.2	17.3

The subject of English is not compulsory at the Degree Examination. A student taking up B.Sc. Subjects has to take English as an Optional Subject. In the present study, there are only 4 groups who have taken up B.Sc. subjects. Their marks in English as an optional subject have been included in the Total marks.

In English the highest achievement of a particular group is 41.6 per cent and the lowest achievement is 33.4 per cent. The difference between the limits is only 8.2 per cent, which shows that the groups are homogeneous in

t his subject.

The subject of Mathematics is meant only for B.Sc. student who comprise of only four groups. The range shows that there is little variability among the achievements of this subject.

Mathematics A Course as a subject has been taken up by three groups of students. The range here is 0.9, which is the shortest and thus there is very little variation.

Same is the case with the subject of Mathematics B Course.

In the case of Chemistry, the range of 12.6 per cent is a bit higher and denotes that there exists little homogenity in the achievements of Chemistry. The achievement in the subject of Physics has a little range of 7.2 and thus there seems to be a little degree of variation.

The subject of Economics has been offered by five groups of students. The achievement in this subject indicates that there exists a little variation among the achievements of various groups in this subject.

The subject of History has been taken up by three groups of students. The range between the high and the low achievement is 5.5., which is very meagre. This leads us to the conclusion that there is insignificant variation among the achievements of History of various groups.

The subject of Political Science has been taken up by three groups. Their achievement in the subject indicates a high degree of variation among themselves.

The subject of Sanskrit has been taken at the Degree Examination by only one group. Hence the question of denoting any relationship does not arise.

The grand total mean percent achievement of Degree Examination has a range of 17.3. per cent. This shows that

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the variability among the total achievement of different groups is of very low degree.

We infer from the above discussion that there exists a certain type of relationship among the groups within subjects at the Degree Examination. To verify this result further, we compare the average mean per cent achievement of the subjects for all the groups. The following table shows the average mean per cent achievements of various subjects for all the group.

Table No. 4.6.

Average mean per cent achievement of Degree Examination of various subjects for all the groups.

Sr.No.	Subject	Average mean per cent achievement.
1.	English	36.3
2.	Mathematics	60.9
3.	Mathematics A Course	58.3
4.	Mathematics B Course	45.3
5.	Chemistry	52.2
6.	Physics	48.9
7.	Economics	42.7
8.	History	46.2
9.	Political Science	41.0
10.	Sanskrit	51.6
EZ	TOTAL	45.0

The highest mean per cent achievement of 60.9 per cent is in the subject of Mathematics and 36.9 per cent is the lowest in the subject of English. The achievements of other subjects lies between these two limits, which shows that there exists some

some relationship among these subjects.

The low achievement in the subject of English at the Degree Examination, once again gives us a rude shock. The poor achievement in English at Intermediate as well as at Degree Examination shows that students were ill prepared for the learning of this language when they entered the College. It is quite evident that the Syllabus in English at High School, gives them a little chance of learning English as a language. Upto this stage students are not in a position to write a single sentence in English correctly. There is an unbridgeable gap between the students' knowledge of English and the instructions imparted to him at the College. Instead of helping him, this prevalent system of education drives him to bitter resentment and defeatism. His school has not prepared him for the task of learning English and the College is of no help.

4. Comparison of mean per cent achievements among subjects within groups at Matriculation.

To compare the mean per cent achievements among the subjects within groups, we have divided the groups of Category No.1 into eight major groups. They are as follows :-

Major Group No.1. It consists of six groups i.e. 1 to 6 having Chemistry and Physics as one of the Elective subjects at Matriculation Examination.

Major Group No.2. It consists of three groups i.e. No. 7,8 and 9, having Hindi and Civics Hygiene as two Elective subjects at the Matriculation Examination.

Major Group No.3.	It consists of two groups i.e. 10th and 11th, having Panjabi and Civics Hygiene as two Elective Subjects at Matriculation Examination.
Major Group No.4.	It consists of only one group with Drawing and Hindi as elective subjects at Matriculation Examination.
Major Group No.5.	It consists of three groups, i.e. group No. 13, 14, and 15, having Sanskrit and Hindi as two elective subjects at Matriculation Examination.
Major Group No.6.	It consists of three groups i.e. No.16, 17 and 18, having Panjabi and Civics Hygiene as two elective subjects and Arithmetic and Household A/C as one of the compulsory subjects at Matriculation Examination.
Major Group No.7.	It consists of three groups i.e. No. 19, 20, and 21, having Hindi and Civics Hygier as two elective subjects and Arithmetic and House Hold Accounts as one of the Compulsory subjects at Matriculation Examination.
Major Group No.8.	It consists of only one group with Sanskr and Hindi as two Elective Subjects and Arithmetic & Household A/Cs as one of the Compulsory subjects at Matriculation Examination.

xxx Major Group.No.1.

When a comparison is made among the subjects of

these

these groups, the mean achievement of Mathematics is the highest and the mean achievement in Drawing is the lowest. There is a slight difference among the performance of other subjects. It can be noted easily that expecting a decrease of about 14 % in the subject of Drawing, the six groups do not show any distinctive character as far as their achievement in the Matriculation Examination is concerned.

Major Group No.2.

When the mean achievements of the Groups of second Major Group are compared, it is observed that there is little difference between the mean achievement of English and the total achievements. The highest achievement is of Mathematics and the mean achievement in other subjects shows a very slight difference. Thus there is little difference among the achievements of these groups.

Major Group No.3.

When a comparison is made among the mean achievements of the two groups of this Major Group, there is a very slight difference of about 3 per cent in the average achievement of English, History, Geography, Panjabi, and the total marks. Thus it is clear that there is little distinction among the achievements of these groups.

Major Group No. 4.

There is only one group in this Major Group and the achievements in the various subjects show a remarkable difference.

Major Group No. 5.

While making a comparison of achievements in these three groups, we see that there is a slight difference among the achievement of English, Hindi and the Total Marks. The highest mean achievement is of Mathematics, which shows a difference of about 20 % with the achievements in other subjects.

Major Group No.6.

When we make a comparison among the mean achievements of these three groups, there is a difference of 3 to 19 per cent among the achievements of various subjects. Thus there is little difference among the achievements of these groups.

MAJOR GROUP NO.7.

When we make a comparison among the mean achievements of these three groups, we find that there is a difference of 2 to 20 per cent among the achievements of various subjects which shows that there is little relationship among the achievements of these subjects.

Major Group No.8.

There is only one group in it. There is little difference among the achievements of various subjects of this group.

5. Comparison of mean per cent achievement among subjects within groups at the Intermediate Examination.

Major Group No.1.

When we make a comparison among the mean achievements of various subjects for the first major group, we find that these six groups have taken the same subjects at their Intermediate Examination. The overall achievements of group No. 6 is the highest and of group No.2 is the lowest. In respect of subjects, the highest achievement in any particular group is of Mathematics. All the groups do not show any distinct characteristic as far as their achievements in the Intermediate Examination are concerned.

Major Group No.2.

While comparing the achievements of group No. 7, 8 and 9, we find that overall achievement of the group No. 9 is the highest. The groups do not show any distinct characteristics in each subject, and this shows a positive relationship among themselves.

Major Group No.3.

When we compare the achievements of Group No. 10 and 11, we find that there is little difference between the achievements in the individual subjects. This leads us to the conclusion that achievements in these two groups have similar characteristics in their individual subjects.

Major Group No.4.

In this group the subjects of Sanskrit and Mathematics have a high achievement, which produces a corresponding change in the total achievement. Thus the achievements in these three subjects shows a similar characteristic. But the achievement in English is very low and bears very little relationship with the rest of the subjects.

Major Group No. 5.

The achievements of these groups at Intermediate Examination, show that the achievements of each subject has a similar characteristics with each other.

Major Group No. 6.

When a comparison is made among the mean achievements of the groups No. 16, 17 and 18 for their overall achievements and in the individual subjects, we find that there is little difference among the achievement of these subjects. The difference varies between 6 and 1 per cent.

Major Group No. 7.

Major Group No.7.

In these groups the mean achievements of different subjects shows a significant difference. The achievement in English is very low where as the achievement in Hindi is a bit better, which affects the grand totals.

Major Group No.8.

Here there is only one group, where the mean achievements of various subjects do not show much variation and thus they can be compared.

6. Comparison of mean per cent achievements among subjects within groups at Degree Examination.

Major Group No. 1.

The students who took Science subjects at their Matriculation and Intermediate Examination have taken up either Mathematics A Course and Mathematics B Course, or Physics and Chemistry in their Degree Examination. Taking the first six groups together, we find that English as a compulsory subject has been taken up by only two groups i.e. Group No. 2 and 4, along with the subjects of Mathematics A Course and Mathematics B Course. The overall achievements in the two group s in the individual subjects, do not differ much.

In the groups who have taken Science subjects, we find, while making the comparison of the mean achievement of these groups, that achievements in Mathematics are higher than the achievements in Chemistry and Physics. The high achievement in Mathematics also affects the total achievement, which leads us to the conclusion that achievements of the individual

subjects of different groups are comparable in this Major Group.

Major Group No.2.

When a comparison is made among the mean achievement of various subjects in the Groups No. 7, 8 and 9, it is noticed that the mean achievement of English is much lower than the achievements of other subjects, which produces a corresponding effect on the total achievement. Thus it shows that the achievement of these Groups can be compared.

Major Group No. 3.

The achievements of these two groups in various subjects shows that comparison can be made, as the achievements show little difference among themselves.

Major Group No. 4.

There is only one Group and the achievements of various subjects in this Group show little variation.

Major Group No. 5.

When the mean achievement of various subjects of Group No. 13, 14 and 15 are compared, it is clear that the achievement in English is much lower than the achievements in other subjects of these groups. In the other subjects the achievement is much higher.

Major Group No. 6.

While making the comparison of the mean achievements of Group No. 16, 17 and 18, we find that the mean achievement in English is much less than the achievement in other subjects of these groups. The total achievement shows little difference among themselves. Thus the difference among the achievements of the various subjects, is insignificant.

Major Group No. 7.

When we compare the mean achievement of Group No. 19, 20 and 21, we find that difference among the achievements of various subjects is not significant and hence they can be compared on a fairly well criteria.

Major Group No. 8.

The mean p er cent achievements of the subjects of this group can be compared, as there is little difference between their achievements.

7. Comparison of mean per cent achievements between subjects at Matriculation and Intermediate Examinations.

A comparative picture of the mean achievements in different subjects in Intermediate and Matriculation Examination can be had from the tables No. 2 A and 2 B. How the students fare relatively in the same subjects at Matriculation and Intermediate Examinations can be clearly understood, if we compare their mean achievements in each group. Here we shall derive at the conclusion by studying the comparison of each subject at the two examinations:-

(1) **English** : English is a common subject at Intermediate and Matriculation Examination for all the groups. It is a compulsory subject at the two Examinations. The difference in the mean achievements at the two Examinations is quite appreciable. There is a steep decrease in the achievement of English in the Intermediate Examination.

(2) **Mathematics** : This subject is taken only by seven groups at Intermediate Examination. There is a

noticeable difference between the achievements in Mathematics at the two examinations. The steep fall in the achievement of Mathematics at Intermediate Examination is quite significant. The difference in achievement between the two Examinations shows that after Matriculation students deteriorate in their standard in Mathematics.

(3) Chemistry : The comparison of mean per cent achievement in the subject of Chemistry at Intermediate has been made with that of Chemistry and Physics at the Matriculation Examination. The achievement at the Matriculation Examination is much better than the achievement at the Intermediate Examination. There is an appreciable decrease in the achievements of Chemistry at the Intermediate Examination.

(4) PHYSICS : Here also the comparison of mean per cent achievement in the subject of Physics at Intermediate Examination and that of Chemistry and Physics at Matriculation Examination has been made. The achievement in the Physics at Intermediate is identical with the achievement of Chemistry and Physics at the Matriculation Examination.

(5) Economics : There is no subject such like Economics at the Matriculation Examination. To compare the mean achievements in the subject of Economics at Intermediate Examination, we have taken History and Geography of Matriculation Examination, which is one of the compulsory subjects

and has some identical contents with that of Economics at Intermediate Examination. Thus there are only six groups who have taken the subject of Economics at Intermediate Examination. There is insignificant difference between the achievements of the two subjects.

) History : Only three groups of students have taken History at the Intermediate Examination. Here the comparison is made between the achievement of History at Intermediate and History and Geography at the Matriculation Examination. There is a very little difference between the achievement of this subject at the two examinations.

) Civics & Elementary Political Science : The subject of Civics and Elementary Political Science at Intermediate Examination has an identical subject of Civics and Hygiene at Matriculation Examination. The subject of Civics and Hygiene is taken more by the girls at the Matriculation Examination but the at the Intermediate stage it is taken equally by the boys and the girls. Here the comparison is possible only for five groups. The achievements at Matriculation in the subject of Civics and Hygiene are a bit high as compared with the achievement of Civics and Elementary Political Science at the Intermediate Examination.

(8) Sanskrit : Four groups of students have taken up Sanskrit as a common subject at Intermediate and Matriculation Examination. The achievements at the two Examinations in this subject are almost identical.

(9) Hindi : The subject of Hindi has been taken by the students of 7 groups at the Intermediate Examination and at the Matriculation Examination. The difference btween the two achievements is very high. The achievement in Hindi at Intermediate Examination is much less than the achievement in Hindi at the Matriculation Examination.

(10) Panjabi : Panjabi as a subject has been taken by five groups of students at the Intermediate and Matriculation Examinations. The mean achievement of Panjabi at Matriculation is much higher than the mean achievement in Panjabi at Intermediate Examination.

(11) GRAND TOTAL : Here the comparison in the Grand Total of all the Groups at Intermediate and Matriculation Examination is made. It is cl ear that the Grand Total of Matriculation Examination is much higher as compared with the Grand Total of the Intermediate Examination. This fact is made clear from the ~~gm~~ foregoing discussion.

8. Comparison of mean per cent achievement between the subjects of Matriculation and Degree Examinations.

A comparative picture of mean per cent achievement in different subjects at Matriculation and Degree Examinations can be had from the tables No. 8-A and 8-C of the Appendix A. The comparison can be made by studying the common subjects at the two Examinations :-

(1) English : The subject of English is optional for the students who have taken up B.Sc. subjects. There are only 18 groups who have taken English at the Matriculation Examination and at the Degree Examination. The achievement in the subject of English at Matriculation Examination is much higher than the achievement in English at the Degree Examination.

(2) Mathematics : There are three subjects of Mathematics at the Degree Examination. One is simple Mathematics, which is meant only for the B.Sc. students, and the other two are Mathematics A Course and B Course, which are taken up by the students in combination. These subjects of Mathematics have been taken up by seven groups of students. They had offered Mathematics at the Intermediate Examination also. The achievement of Mathematics at the Matriculation Examination are much higher than the achievements at the Degree Examination.

(3) **Chemistry** : The mean achievements in the subject of Chemistry at Degree Examination have been compared with the mean achievements of Chemistry and Physics at Matriculation Examination. The subject of Chemistry has been offered by four groups at the Degree Examination. There is a little difference between the achievements of two subjects at the two Examinations.

(4) **Physics** : The subject of Physics is one of the two subjects for the B.Sc. students included in this study. It has been taken up by only four groups of students. When we compare the achievements of physics at Degree Examination with that of Chemistry and Physics at the Matriculation Examination, we notice a large difference btween the two achievements.

(5) **Economics** : When we make a comparison in the achievements of Economics at Degree Examination with that of the achievements in History and Geography of the Matriculation Examination, we notice a little difference between the two achievement

(6) History : Only three groups of students have taken up the subject of History at the Degree Examination. The achievements of History at the Degree Examination are compared with the achievements of History and Geography at the Matriculation Examination. There is a wide difference between the two achievements in each group.

(7) Political Science : The comparison of the achievements in Political Science at the Degree Examination has been made with the achievements in Civics & Hygiene at the Matriculation Examination. There are five groups where this combination of subjects at the two examinations occur. There is little difference between the two achievements.

There are only 7 subjects of Degree Examination which have some common grounds at the Matriculation Examination. While making an individual comparison of the subjects, we have seen that almost all the subjects have some difference between their achievements at the two Examinations, which leads us to the conclusion that the performance at the Degree Examination is much less than the performance at the Matriculation Examination.

9. Comparison of mean per cent achievements between subjects at Intermediate and Degree Examinations.

In the previous two sections, we have compared the achievements of different subjects at Matriculation Examination with that of Intermediate and Degree Examinations. We have noticed that there exists a difference between the achievements of Matriculation and Intermediate Examinations and Matriculation and Degree Examinations. In this section we shall make an attempt to compare the achievements of different groups in Intermediate and Degree Examinations.

(1) English : The subject of English is compulsory at Intermediate Examination, but it is optional

at the Degree Examination. Only 18 groups have offered English as a compulsory subject at the Degree Examination. The achievements in English at the Intermediate Examination are quite identical with the achievements in English at the Degree Examination.

(2) Mathematics : When we compare the mean achievements in Mathematics at Intermediate with the subjects of Mathematics, Mathematics A Course and Mathematics B Course, at Degree Examination, we find that difference between the two achievements is very low.

(3) Chemistry : The subject of Chemistry at Degree Examination has been taken up by only four groups. The achievements of these groups in Chemistry at Intermediate Examination are almost identical with the achievements of these groups at the Degree Examination.

(4) Physics : As in the case of Chemistry, the subject of Physics has been taken up by the same four groups. When we compare the achievements in Physics of these four groups at the Degree Examination and the Intermediate Examination, we note that achievements at Degree Examination are much lower than the achievements of Physics at the Intermediate Examination.

(5) Economics : When we compare the achievements of Economics at the Intermediate Examination with that of Degree Examination, we find that there

exists a very narrow difference between the two achievements.

(6) History : The achievement in History at the Degree Examination shows a significant difference with the achievement in History at the Intermediate Examination.

(7) Political Science : The achievements in Political Science at the Degree Examination have been compared with the achievements in Civics and Elementary Political Science of the Intermediate Examination. There is very little difference between the achievements of these two Examinations.

(8) Grand Total : The total achievements of all the groups at the two Examinations do not differ much.

The discussion made in this Chapter boils down to the following points :

The students who have achieved high marks in their Matriculation Examination, are the probable persons to receive higher education. In our study there is not a single case which has come to our notice where a student getting poor marks in the Matriculation Examination has achieved good marks at his Intermediate or Degree Examination. The students who get high marks do achieve poor marks in their Intermediate or Degree Examinations.

Here one of the main points of the whole study comes before us. Whether the students whose achievements are very high in the Matriculation Examination be allowed to pursue any Course at the College or they be allowed to take up particular subjects at their Intermediate Examination*

We also observe that there is much fluctuation in the achievements of boys and girls at the three Examinations. In the case of only girls' groups, there is little fluctuation among the achievements of each subject, whereas in the case of boys, the fluctuation is much higher in almost all the subjects. This leads us to the conclusion that girls are more constant in their efforts for study than the boys.

The students who have taken up Science subjects at the Matriculation Examination have achieved good marks at the Intermediate as well as Degree Examinations.

B. Standard Deviations.

When we compare the Standard Deviations (Appendix A, Tables No. 1-B, 2-B and 3-B) of the Matriculation, Intermediate and Degree Examination achievements of the total groups in Category No.1, it is found that in the subject where mean is high, the variation of marks are also very high. This suggests that higher the means the higher is the standard deviation. We conclude from this that the candidates who score high in Matriculation, Intermediate and Degree Examinations in different subjects are very few. The consequences of this phenomena will be discussed in details in the later chapters.

CHAPTER No. 5.

A STUDY OF RELATIONSHIP OF MARKS.

The Correlation of Variables.

The use of means and standard deviations is a cumbersome method of attempting to discover the relationship between variables when a large number of groups of individuals are involved, for it is not an easy task to keep in mind a great many sets of means and standard deviations in order to compare them and judge them, if they denote high or low degree of relationship . In the present investigation we have used means and standard deviations, simply to denote the relationship, but we need a precise index of degree of relationship between variables. Thus here co-efficient of correlation is calculated.

A co-efficient of correlation is a number falling between Zero and one, that indicates the degree of relationship, that exists between two variables. It can be either positive or negative in sign, according to the relationship which is direct or inverse. A direct relationship is obtained when the high scores on one variable are associated with the high score on the other variable. An inverse relationship is obtained when the high scores on one variable are associated with low score on the other variables. A co-efficient of ~~a~~ + 1.00 indicates a p erfect positive relationship, 0.00 shows no relationship at all and -1.00 indicates a perfect negative relationship. Thus between 0 and 1, there can be any degree of relationship and one of the great merits of correlation co-efficient is that it sums up so much information in the

one figure. Its uses thus enable us to compare many sets of datas with respect to the degree of relationship existing among the variables in a more direct and simple manner, which is not possible by the use of means and standard deviations.

In this investigation, we have employed two-way method of calculating the co-efficient of correlation. For the study of the achievement of the students for four years, we have calculated the co-efficient of correlation by forming a scattergram and for the calculation of coefficient of correlation for the study of two-year achievement of the students we have used the formula for calculating the correlation of ungrouped data.

We have divided our sample into groups on the basis of subjects at the three Examinations, which entail the calculation of approximately 4000 co-efficient of correlation, which will have some adverse effect if presented in the mass scale. We, therefore, have calculated the average co-efficient of correlation for all the subjects at the three examinations. The tables showing the co-efficient of correlation for each group for the study of achievements for four years have been attached in the Appendix B, I.1 to I.22.

In this Chapter, we shall base our discussion on the average coefficient of correlation and thus have organized the results in the following seven sections :-

1. Comparison of co-efficient of correlation among the achievements in individual subjects at Matriculation Examination.
2. Comparison of co-efficient of correlation among the achievements in individual subjects at Intermediate Examination.

3. Comparison of co-efficient of correlation among the achievements in individual subjects at the Degree Examination.
4. Comparison of co-efficient of correlation between the achievements in the subjects of Matriculation and Intermediate Examinations.
5. Comparison of co-efficient of correlation between the achievements in the subjects of Matriculation and Degree Examinations.
6. Comparison of Co-efficient of correlation between the achievements of the subjects of Intermediate and Degree Examinations.

1. Comparison of Co-efficient of correlation among the achievements in individual subjects at the Matriculation examination.

The average inter-correlation among the subjects of Matriculation for all the groups of Category No.1 is given in the table No. 5.1 at page 71.

There are 44 co-efficient of average correlation among the subjects at the Matriculation Examination. All the co-efficien of correlation are statistically significant and have positive sign

The subject of English has the highest co-efficient of correl tion of +.62 with the grand total marks of the Matriculation Examination, and the lowest with the subject of Drawing. It is thus evident that from the total marks of Matriculation, the marks of English can be estimated.

Table No. 5.1.

Average Inter-correlation among the subjects for the Matriculation Examination of Category No.I.

Subjects	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	ΣX
X1	-										
X2	.57	-									
X3	.54	-	-								
X4	.46	.46	.40	-							
X5	.41	.56	-	.57	-						
X6	.49	.33	.55	.42	-	-					
X7	.32	.65	-	.47	.47	-	-				
X8	.40	.47	-	.53	.38	-	-	-			
X9	.46	.40	.63	.41	.40	.40	.50	.59	-		
X10	.39	.46	.29	.50	.30	.46	-	-	-	-	
ΣX	.62	.51	.43	.47	.53	.42	.33	.67	.37	.51	-

The subject of Mathematics has the highest coefficient of correlation of +.65 with the achievements of Drawing and the lowest of +.33 with the Civics and Hygiene of the Matriculation Examination. The highest coefficient of correlation with the achievements of Drawing signifies that both the subjects have much common and the achievements of Mathematics can predict the probable achievements in Drawing.

The subject of Arithmetic and Household Accounts has the highest coefficient of correlation of +.58 with Hindi, and the lowest with the achievements of History and Geography.

The subject of History and Geography has the highest co-efficient of correlation of+.58 with Sanskrit and the lowest of =.40 with Arithmetic and Household Accounts. The subject of History and Geography is one of the compulsory subjects at the Matriculation Examination. It is the subject which is p oorly attended to by the Teachers and the pupils. Its highest coefficient of correlation with Sanskrit does not make any meaningful interpretation.

The subject of Physics and Chemistry has the highest co-efficient of correlation of +.58 with total marks of the Matriculation and the lowest of +.40 with the subject of Panjabi. This indicates that the total achievement of Matriculation can be probably judged from the achievements of Physics and Chemistry.

The subject of Civics and Hygiene has the highest co-efficient of correlation of +.55 with the subjects of Arithmetic & Household Accounts and the lowest coefficient of correlation of +.33 with the subjects of Mathematics. This fact leads us to the conclusion that in the case of girls

we can predict their achievements in the subject of Arithmetic & Household Accounts from the achievements of Civics & Hygiene.

The subject of Drawing has the highest coefficient of correlation of +.65 with the achievements of Mathematics and the lowest of +.33 with the achievements of Total Marks of the Matriculation. This shows that the subject of Drawing is a poor predictor for the total achievement of Matriculation Examination.

The subject of Sanskrit has the highest co-efficient of correlation of +.67 with the total achievements of the Matriculation and the lowest of +.38 with that of Physics and Chemistry. This fact shows that Sanskrit has the efficiency of predicting the total achievement of the Matriculation Examination.

The subject of Hindi has the highest co-efficient of correlation of +.59 with that of Sanskrit and the lowest of +.40 with the achievements of Mathematics, Chemistry, Physics and Civics Hygiene. This shows that the achievement of Sanskrit has the efficiency of predicting the marks of Hindi at the Matriculation Examination.

The subject of Panjabi has the highest co-efficient of correlation of +.51 with the ~~the~~ total marks and the lowest co-efficient of + .39 with English. The low coefficient between English and Panjabi shows that Panjabi is a poor predictor in assessing the achievement of English.

In case of total marks of Matriculation Examination the highest coefficient of correlation of +.62 is with the subject of English and the lowest one is +.33 with the Drawing achievements.

From the foregoing discussion, we draw the following conclusions:

1. The total marks of the Matriculation Examination formed the highest coefficient of correlation with the achievements in English, Physics-Chemistry, Sanskrit and Panjabi.
2. The co-efficient of correlation between the average achievements of Sanskrit and the total achievements of Matriculation Examination is the highest. Thus we can say that the achievements of Sanskrit are the best predictor for assessing the total achievements of the Matriculation Examination.
3. The coefficient of correlation is the lowest between the achievements of English and Drawing, Mathematics and Drawing, Arithmetic & Household Accounts and History and Geography and Panjabi and English, which indicates that they are the poor predictors for predicting each other's achievements.

2. Comparison of co-efficient of correlation among the achievements of individual subjects at the Intermediate Examination.

The average coefficient of correlation among the subjects of Intermediate Examination for all the groups of Category No.1 is given in Table No. 5.2 at page 75. There are only 20 co-efficients of correlation among the subjects of Intermediate Examination for all the groups of Category No.1. All the co-efficients of correlation are positive and statistically significant.

Table No. 5.2.

Average Inter-correlation among the subjects of Intermediate Examination of Category No. 1.

Subjects	Y1	Y2	Y3	Y4	Y5	Y 6	Y7	Y8	Y9	Y10	EY
Y1	-										
Y2	.37	-									
Y3	.32	.58	-								
Y4	.29	.55	.68	-							
Y5	.44	-	-	-	-						
Y6	.45	-	-	-	-	-					
Y7	.35	-	-	-	-	-	-				
Y8	.51	.39	-	-	.56	-	.60	-			
Y9	.42	-	-	-	.42	.48	.36	-	-		
Y10	.49	-	-	-	.31	-	.44	-	-	-	
EY	.46	.55	.54	.63	.36	.50	.64	.48	.42	.41	-

The subject of English has ten co-efficient of correlation with different subjects of the Intermediate Examination. The highest co-efficient of correlation is +.51 with Sanskrit and the lowest co-efficient is +.29 with Physics achievements. The subject of Sanskrit at the Intermediate Examination is taken by the students who are taking up Art subjects. The lowest co-efficient with the achievements of Physics is the indicator that the students who are taking up Science subjects are not good in English.

The subject of Mathematics formed five co-efficient of correlations with the various subjects of Intermediate Examination. The highest co-efficient of correlation is +.58 with the achievements of Chemistry and the lowest with English of +.37. This indicates that the subject of Chemistry has the highest efficiency for predicting the achievements of Mathematics, whereas the efficiency of Mathematics decreases in predicting the achievement of English.

The subject of Chemistry formed four coefficient of correlation with various subjects of the Intermediate Examinations. The highest co-efficient of correlation among them is + .68 with the subject of Physics and the lowest is+.32 with that of English. Here again, the lowest coefficient of correlation with English indicates that for predicting the marks of Chemistry English is a poor predictor, whereas for predicting the marks of Physics it has the efficiency of predicting to a great extent.

The subject of Physics formed four co-efficient of correlations with various subjects of Intermediate

Examination. The highest co-efficient of correlation is +.68 with that of Chemistry and the lowest is with that of English achievements. Thus this reaffirms our previous observation that English is a poor predictor for Physics, whereas the achievements of Chemistry have the potentialities to predict the achievements of Physics.

The subject of Economics has the highest coefficient of correlation of +.56 with the achievements of Sanskrit and the lowest of +.31 with that of Panjabi, which shows that the subject of Economics has the efficiency of predicting the achievements of Sanskrit.

The subject of History has three co-efficient of correlation with other subjects of Intermediate Examination. The highest co-efficient of correlation of +.50 is with the total marks which leads us to form the idea that the achievement in History can predict the total achievements of the Intermediate Examination.

The subject of Civics and Elementary Political Science has five coefficient of correlation with the different subjects of Intermediate. The highest coefficient of correlation is +.52 with the subject of Sanskrit and the lowest +.36 with that of English. This shows that the achievements of English are poor predictor for the achievement of Civics and Elementary Political Science.

The subject of Sanskrit has five co-efficient of correlations with different subjects. The highest co-efficient of correlation of +.64 is with the total achievement and the lowest of +.35 is with the Hindi. At the Intermediate Examination also the subject of Sanskrit has the efficiency of predicting the total achievements of the Intermediate Examination.

The subject of Hindi has five coefficient of correlations with various subjects of the Intermediate Examination. The highest coefficient of correlation of +.48 is with the total marks of Intermediate Examination and the lowest coefficient of correlation is +.35 with the achievement of Civics and Elementary Political Science. Although the subject of Hindi has the highest coefficient of correlation with the total achievement of the Intermediate Examination, yet its value is too small, and will not depict the whole story.

The subject of Panjabi has four coefficient of correlation with various subjects of the Intermediate Examination. The highest coefficient of correlations is +.49 with the achievement of English and the lowest coefficient of correlation is +.31 with that of Economics. This shows that the achievements in Panjabi are very near to the achievement of English.

The total marks of the Intermediate Examination for the highest coefficient of correlation of +.64 with the achievement of Sanskrit and the lowest is +.36 with the Economics. This shows that at the Intermediate Examination too the achievement in Sanskrit has the highest potentiality of predicting the total achievements of the Intermediate Examination.

The above discussion boils down to the following major points :-

1. The subject of English forms a very low correlation with other subjects of the Intermediate Examination.
2. The subjects of Physics & Chemistry have a high coefficient of correlation with each other and thus prediction can be made from each other's achievements.
3. The subject of Sanskrit has the highest coefficient of

correlation with the total marks of Intermediate Examination, which indicates that from the achievement of Sanskrit we can predict the total marks of the Intermediate Examination.

4. The subject of Physics has the highest coefficient of correlation with the total marks of the Intermediate. Thus among the Science subjects the achievement of Physics has the potentialities to predict the total achievements of the Intermediate Examination.

3. Comparison of coefficient of correlation among the achievements in individual subjects at the Degree Examination.

The average inter-correlation among the subjects of Degree Examination for the total groups of Category No.1 is given in table No. 5.3 at page 80. There are only 1 9 coefficient of correlation among the subjects at Degree Examination. All these coefficient of correlations are statistically significant and bear a positive relationship.

The subject of English bears the highest coefficient of correlation of +.51 with the total achievements of the Degree Examination and the lowest of + .40 with that of Political Science. The highest coefficient of correlation with total marks indicates that the prediction can be made of the total marks from the marks of English.

The subject of Mathematics is taken by B.Sc. students. It has the highest coefficient of correlation of +.68 of achievements in Physics. This shows that the achievement of Mathematics has the efficiency of predicting the achievement of Physics at Degree Examination.

The subjects of Mathematics A Course and Mathematics B Course bear only two coefficient of correlation, which show that both are inter-dependent in their achievements.

Table No. 5.3.

Average Inter-correlation among the subjects of Degree Examination of Category No.1.

Subjects	Z1	Z2	Z3	Z4	Z5	Z6	Z7	Z8	Z9	Z10	EZ
Z1	-										
Z2	-	-									
Z3	.39	-	-								
Z4	.46	-	.64	-							
Z5	-	.52	-	-	-						
Z6	-	.68	-	-	.71	-					
Z7	.42	-	-	-	-	-	-				
Z8	.46	-	-	-	-	-	-	-			
Z9	.40	-	-	-	-	-	-	-	-		
Z10	.45	-	-	-	-	-	-	-	-	-	
EZ	.51	.57	.54	.50	.46	.46	.51	.56	.51	.54	-

The subjects of Physics and Chemistry forms three co-efficient of correlations with different subjects of the Degree Examination. Both the subjects are inter-dependable and the prediction xx of one's marks can be made from the marks of the other subject.

The subject of Economics bears the highest coefficient of correlation xx + .51 with the total achievements of the Degree Examination. This shows that from the achievement of Economics as an individual subject, we can get the idea of the total marks of the Degree Examination.

The subject of History bears the highest coefficient of correlation of .55 with the total achievements, which gives the indications that from the achievements of History, we can guess the total achievements at the Degree Examination. The subject of Political Science also bears the highest co-efficient of correlation of +.51 with the total achievements which leads us to the conclusion that the total achievements can be predicted from the achievements of the Political Science.

The subject of Sanskrit has been taken up by only one group of students. It bears the highest coefficient of correlation of+.54 with the total achievements and thus indicates that the total achievement can be best judged from the achievements of Sanskrit.

The total marks of the Degree Examination bear the highest coefficient of correlation of +.55 with the achievements of Sanskrit. This shows that xx from the marks of Sanskrit prediction can be made of the total achievements of Degree Examination.

From the above discussion following conclusions can be drawn :-

(1) The achievements of English bears the highest coefficient of correlation with the total achievements.

(2) The subjects of Mathematics A Course, Mathematics B Course, Physics and Chemistry are [illegible] inter-predictable.

(3) The subject of Sanskrit bears the highest coefficient of correlation with the total achievements.

(4) The subjects of Economics, History and Political Science bears a higher coefficient of correlation with the total achievements of the Degree Examination.

4. Comparison of coefficient of correlations between the achievements in the subjects of Matriculation and Intermediate Examination.

The average coefficient of correlations among the subjects of Matriculation and Intermediate Examination for all the groups for Category No.1 are given in table No.5.4 at page 83. There are 98 coefficient of correlations, all are statistically significant. The subjects of Intermediate are the criteria and the subjects of Matriculation are the Predictors. In this section, we shall find out which is the best subject at Matriculation, which can predict the achievement in other subjects of Intermediate Examination. For the simplicity of presentation, we shall take each criteria separately.

Table No. 5.4

Average Inter-Correlation among the subjects of Matriculation and Intermediate Examinations of Category No.I.

XI	X2	X3	X4	X5	X6	X7	X8	X9	X10	EX.
.53	.59	.55	.54	.61	.60	.61	.52	.56	.54	.51
.57	.61	-	.58	.71	-	.59	.61	.73	.51	.55
.63	.71	-	.59	.75	-	.54	.61	.57	.64	.54
.59	.71	-	.59	.59	-	.45	.57	.59	.65	.49
.56	.53	.47	.52	-	.64	.61	.62	.61	.43	.45
.62	.59	.49	.54	-	.50	-	-	.40	.61	.41
.52	.67	.41	.44	-	.57	-	.51	.68	.47	.52
.55	.56	.57	.50	-	-	-	.41	.74	-	.55
.45	.63	.43	.52	-	.55	.71	-	.67	-	.52
.59	.50	.58	.52	-	.53	-	-	-	.74	.57
.53	.53	.46	.53	.52	.56	.49	.57	.51	.64	.55

INTERMEDIATE ENGLISH

There are eleven coefficient of correlations of English of Intermediate examination with different subjects of the Matriculation examination. The range between the highest and the lowest coefficient of correlation is .10, which means that there is little variation, and every subjects have a signaficant coefficient of correlation.

INTERMEDIATE MATHEMATICS.

The subject of Mathmatics of Intermediates examination forms nine coefficient of correlation with different subjects of Matriculations examination. There is a siginificant range of .20 between the highest and the lowest coefficient of correlation. The little variation in the correlations indicates that the subjects of Mathematics at Intermediate has little siginificance for predicting the achievements in different subjects at the Matriculation Examination.

INTERMEDIATE CHEMISTRY.

The subject of chemistry of the Intermediate Examination has nine coefficient of correlations with various subjects of Matriculation. There is a siginificant range of .21 between the highest and the lowest coefficient of correlation. The ~~[illegible]~~ highest rank of the coefficient of correlation suggest that chemistry achievements at Intermediate are akin to the achievements of the various subjects at Matruclation Examination.

INTERMEDIATE PHYSICS.

The subject of Physics of the Intermediate Examination has nine coefficient of correlation, with different subjects of the matriculation Examination. There is a significant range of .26 between the highest and the lowest from the different coefficient of correlation it is clear that the achievements in the subjects of physics at Intermediate Examination are significantly related with

with the achievements of various subjects at the Matriculation Examination.

INTERMEDIATE ECONOMICS.

Economics as the subject at Intermediate Examination forms ten coefficient of correlations with the various subjects of Matriculation Examination. The range between the highest the lowest coefficient of correlation is .19. This indicates that the subject of Economics has a significant relationships with the subject of Matriculation. Thus the subjects of Matriculation has the potentialities for estimating the proble marks in the subject of Economics at the Intermediate examination.

INTERMEDIATE HISTORY.

There are Eight coefficient of correlations between the the subject of History at the Intermediate Examination and various subject of the Matriculation Examination. All the coefficients are statistically significant. The range between the upper and the lower limit is .21 it suggests that the acheivements in the various subjects of Matriculation Examination has the diagonstic value for estimating the achievements of History at the Matriculation Examination. The degree of estimation differ from subject to subject.

INTERMEDIATE CIVICS AND ELEMENTRY POL. SCIENCE.

The subject of civics and elementry Pol. Science of the Intermediate Examination forms nine co-efficient of correlation with various subjects of Matriculation Examination. The range of co-efficient of correlation is high, which indicates that the subject of civics and elementry pol. sicience has very little potentiality to be assessed by

by the subjects of Matriculation Examination.

INTERMEDIATE SANSKRIT.

The subject of Sanskrit forms only seven co-efficient of correlation with various subjects. The range between the upper and lower limit is.18 which clearly indicates that subject forms a correlation of high degree. Thus it is presumable that the marks of sanskrit can be assessed from the achievements of different subject at the Matriculation Examination.

INTERMEDIATE HINDI.

The subject of Hindi forms the highest co-efficient of correlation with various subjects. The range is .28 which is the highest and indicates that the achievements of various ~~of~~ subjects of Matriculation Examination has little potentialities of predicating marks of Hindi at the Intermediate Examination.

INTERMEDIATE PUNJABI.

There are only seven co-efficient of correlation with the different subjects of Matriculation Examination with the Intermediate Punjabi. The range between the upper and lowe limit of .24 suggests that the subject of Punjabi at Intermediate can not be predicated normally from the achievements of various subjects of Matriculation Examination.

INTERMEDIATE TOTAL MARKS.

The total marks of Intermediate Examination forms eleven co-efficient of Correlation with different subject of Matriculation. The small range of .18 between the upper

and lower limits of co-efficient of correlation clearly indicates that almost all the subjects of Matriculation can predict the total marks at the Intermediate Examination. However the degree of their relationship may differ.

The above discussion clearly significes the following result.

1. Almost all the subjects of Matruclation Examination forms a significant correlation with the achivements of various subjects at Intermediate Examination. The degree of co-efficient does differ from subject to subject. Thus the achievement of the individual subject of the Intermediate Examination can predicated from the achiewement of Matriculation Examination can be predicated with a fair amount of accuracy.

5. COMPARISION OF CO-EFFICIENT OF CORRELATION BETWEEN THE ACHIEVEMENTS IN THE SUBJECTS OF MATRICULATION AND DEGREE EXAMINATION.

In this section Matriculation Examination is the predictor and the Degree Examination is the second Creteria. The co-efficients of correlation between the achievements in the various subjects of Matriculation and Degree Examination are given in the table No. 5.5 at the page is 88. There are 98 co-efficeint of cor elation in all. These co-efficient of correlation are statistically significant. Here we shall take each of the second cretaria of Degree subjects and shall assess its degree of Relationship with the other subjects of the Matriculation Examination.

TABLE NO. 6.6

Average Inter-correlation among the subjects of Matriculat
and Degree Examinations of Category No. I.

SUBJECTS	XI	X2	X3	X4	X5	X6	X7	X8	X9	X10	XL.
ZI	.46	.49	.56	.60	.61	.52	.58	.46	.45	.49	.46
Z2	.57	.63	-	.68	.67	-	.40	.45	.81	.42	.49
Z3	.46	.64	-	-61	.52	-	.53	.57	.58	-	.47
Z4	.47	.60	-	.62	.64	-	.63	.49	.55	-	.48
Z5	.65	.65	-	.72	.71	-	.[illegible]	.[illegible]	.51	.56	.51
Z6	.61	.65	-	.69	.66	-	.41	.57	.69	.65	.46
Z7	.48	.56	.40	.54	-	.55	.65	.57	.49	.49	.50
Z8	.64	.63	.68	.54	-	.57	-	-	.48	.59	.51
Z9	.60	.46	.56	.48	-	.64	-	.56	.55	.51	.61
Z10	.58	.57	.56	-	.58	-	-	.52	-	.64	
ZL.	.49	.49	.54	.50	.48	.55	.42	.48	.54	.49	.6

DEGREE ENGLISH.

There are eleven co-efficient of correlation between the subject of English of Degree Examination and the different subjects of Matriculation Examination. All the co-efficent are stastically significant. The range of .15 between the upper limit and the lower limit of correlation clearly indicates that there is little variation of correlation and hence they have a fair amount of relationship between the achievements of English and other various subjects of the Matriculation Examination.

DEGREE MATHEMATICS.

This subject is only of the Scinece subjects at the Degree Examination. There are nine co-efficients of correlation. The difference between the upper limit and the lower limit of .41 is very great and thus clearly indicates that the achievements of Mathematics at Degree Examination with other various subjects of the Matriculati Examination bears relationship but in varying degree.

DEGREE MATHEMATIC A COURSE.

The subject of Mathematics A course has been taken by only a few groups of students. But still it forms co-efficient of correlation with nine Matriculation subject. All the co-efficient of correlations are statistically significant. The small range of .18 between the upper and the lower value of the co-efficient of correlation, clearly denotes that the achievements of different subjects of Matriculation Examination has the potentiality to assess the probable marks of Mathematics A course of the Degree Examination.

DEGREE MATHEMATIC B COURSE.

The subject of Mathematics B course is a twin subject of the Mathematics A course. Hence what has been said under the heading of Mathematics A course is absolutely true with the subject of Mathematics B Course.

DEGREE CHEMISTRY.

The subject of chemistry at the Degree Examination has been taken up by the Students of only four groups. It has nine co-efficient of correlations with various subjects of Matriculation Examination. The range between the highest and lowest co-efficient of correlation is ± .20. The range is not so big. Hence we find that there is no relationship between the marks of Chemistry of the degree Examination with those of different subjects at the Matriculation Examination. This leads us to conclude that the achievements of different subjects of Matriculation can predict the marks of the Chemistry of the Degree Examination.

DEGREE PHYSICS

The subject of Physics is the twin sister of the subjects of Chemistry. The conclusions, which we have drawn in the case of Chemistry, equally hold good for the subjects of Physics of the Degree Examination.

DEGREE ECONOMICS.

The subject of Economics of the Degree Examination forms ten co-efficient of correlation with various subjects of Matriculation Examination. All the co-efficient

subjects of Matriculation Examination. The range between the higest limit and lowest limit of the co-efficient clearly shows that the achievements have a high power of relationship and thus the- we can safely presume here that the achievements of Sanskrit at the Degree Examination can be assumped from the achievements of other subjects at the Matriculation Examination.

DEGREE TOTAL MARKS.

The total achievements of the Degree Examination forms eleven co-efficient of correlation with different subjects of Matriculation Examination. All are statistically significant. The small range of .16 among the co-efficient of correlations, clearly indiates that the different subjects of Matriculation Examination can predict the total achievements of the degree Examination.

From the above discussion, we can draw the following conclusion.

1. All the subjects of Matriculation forms significant co-efficient of correlation with the achievements o various subjects at the Degree Examination.
2. The performance at the Degree Examination are prodicable from the performance of the Matriculation Examination.

2.

...contd...93

6. COMPARISION OF CO-EFFICIENT OF CORRELATION BETWEEN THE ACHIEVEMENTS IN THE SUBJECTS OF INTERMEDIATE AND DEGREE EXAMINATION.

The correlation between the achievements in the subjects of Intermediate and Degree Examination is given in the table No. 5.6 at page 94. The co-efficient of correlation in this section are discussed in respect of two criteria i.e. between Intermediate achievements and Degree achievements. There are 68 co-efficients of correlation. All are statistically significant, for the simplicity of presentation, we shall take the Intermediate Examination as our criteria and shall compare its achievements with the Degree Examination achievements for each subject separately.

THE SUBJECT OF ENGLISH AT INTERMEDIATE EXAMINATION.

There are eleven co-efficient of the English of Intermediate Examination with that of the other subjects of the Degree Examination. The difference between the hig hest and the lowest co-efficient of correlation is .9 whic indicates that the achievements of English at the Intermediate Examination have a close relationship with the achievements of other subjects at the Degree Examination. Thus we can safely say that an estimates achievements of differnt subjects of the Degree Examination can be made from the achivement of sub English at the Intermediate Examination.

TABLE NO. 5.6

Average Inter-correlation among the subjects of Intermedia
and Degree Examinations of Category No.I.

SUBJECTS	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	EY.
X1	.49	.51	.51	.62	.57	.48	.40	.54	.42	.46	.53
X2	.61	.53	.55	.55	-	-	-	-	-	-	.60
X3	.49	.53	.58	.73	-	-	-	-	-	-	.54
X4	.57	.53	.68	.72	-	-	-	-	-	-	.57
X5	.40	.50	.52	[illegible]	-	-	-	-	-	-	.61
X6	.65	.71	.61	.58	-	-	-	-	-	-	.57
X7	.58	-	-	-	.55	-	.54	.56	.59	.46	.66
X8	.48	-	-	-	-	.60	-	-	.48	.59	.61
X9	.44	-	-	-	-	-	-	.54	.39	.65	.56
X10	.62	-	-	-	-	-	-	.61	.45	-	.53
EX.	.52	.44	.57	.61	.52	.53	.52	.59	.54	.47	.58

THE SUBJECT OF MATHEMATICS AT THE INTERMEDIATE EXAMINATION.

The subject of Mathematics forms seven co-efficient of correlation with different subjects of Degree Examination. All the co-efficient of correlation are statistically significant. The range among these co-efficient is .27 which is two big, but when we see the figures we find that out of seven co-efficient of correlation only one is as high as .71 which makes the imbalance conclusion. The achievements of Mathematics has the potentiatities of predicting the probable achievements in other subjects at the Degree Examination.

THE SUBJECT OF CHEMISTRY AT THE INTERMEDIATE EXAMINATION

The subject oc Chemistry at Intermediate Examination forms seven co-efficient of correlation with various subjects of the Degree Examination. All the co-efficients are significant . The range is .17 which means that there exists a relationship among the achievement of chemistry at the Intermediates Examination and the various subjects of the Degree Examination. Thus we can concluded that a predistion of marks of carious degree subject can be made from the achievements of Chemistry at the Intermediate Examination.

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THE SUBJECT OF PHYSICS AT THE INTERMEDIATE EXAMINATION.

The subject of Physics at Intermediate Examination is same as the subject of Chemistry which has been dealt in details. Here the range is much less than the range in the case of chemistry which shows that the subject of physics is more effective than the subject of chemistry in predicting the marks of various subjects at the Degree Examination.

THE SUBJECT OF ECONOMIS AT THE INTERMEIDATE EXAMINATION

The subject of Economics forms only three Co-efficient of correlation with different subjects of Degree Examination. There is very little difference among these three co-efficient of correlations. This shows that prediction of marks of three subjects at Degree Examination from the marks of Economics at Intermediate Examination can be done with a fair amount of accuracy.

THE SUBJECT OF HISTORY AT THE INTERMEDIATE EXAMINATION.

In the case of the subject of History at Intermediate Examination, same is the case as that of Economics.

The subject of Civics and the Elementry Political Science at the Intermediate Examination.

The achievement in this subjects do not represent a different charactristics than that of Economics and History. This leads us to the conclusions that the subjects of History, Economics and Politcial Science can be used with accuracy in in making a prediction of marks for the Degree Examination from the

Intermediate marks.

THE SUBJECT OF SANSKRIT AT THE INTERMEDIATE EXAMINATION.

The subject of Sanskrit forms five co-efficient of correlation with various subjects of the degree examination. All the correlation are significant and they do not differ much in the achievements. Thus it can be concluded that the achivements of Sanskrit at Intermediate can be use for the purpose of predicting the marks of the degree Examination.

THE SUBJECT OF HINID AT THE INTERMEDIATE EXAMINATION.

There are six co-efficient of correlation for the subject of Hindi at the Intermediate Examination with differnt subjects at the Degree examination from the figures of co-efficient of correlation it is clear that with certain subjects the correlation is very low and thus we conclude that the achievement in Hindi of Intermediate examination have little value for predicating purposes.

THE SUBJECT OF PUNJABI AT THE INTERMEDIATE EXAMINATION.

The subject of Punjabi forms five co-efficients of of correlation with the various subjects of the Degree Examination. The range between the highest and lowest co-efficient is .19, which indicates that the marks of Punjabi can be used for predicting the marks of various other subjects of the Degree Examination.

P.T.O.98

The TOTAL MARKS AT THE INTERMEDIATE EXAMINATION.

There are eleven co-efficients of correlation among the total marks of Intermediate Examination and the different subjects of the Degree Examination. All the eleven co-efficient of correlations are significant. The range among them is only .11 which shows that they have a close relationship. The shortness in range can be interpreted that the toal marks of the Intermediate Examination can be used with a fair amont of accuracy for predicting the marks of various degree subjects.

From the above discussion we arrise at the following conclusions.

1. There is close relationship between the achivements of different subjects at Intermeidat Examination with that of Degree Examination.
2. All most all the subjects of Intermediate Examination can be used for predicting the marks the the Degree Examination with fair amount of accuracy.
3. The total marks of the Intermediate Examination has got great potentiality for predicting the marks of the Degree Examination.

P.T.O.99

PART II

A TWO YEAR STUDY OF ACHIEVEMENTS OF THE STUDETNS AT MATRICULATIONS AND INTERMEDIATE EXAMINATION.

CHAPTER VI.

MEAN ACHIVEMENTS AND VARIATION.

In this chapter we proposed to study the students achivements at Intermeidate Examination in comparision to their achievements in the Matriuclation Examination only. We had laid down in the previous chapters that for the purpose of this study we have grouped the data collected the second category upto Intermediate Examination, with that of first category data upto the same Examination. For the convenience of presentation of the statistical results of mean precent achievements for the category No.2, they have been organised on the bases of following five sections.

1. Comparision of mean per cent achievements among groups within subjects at Matriculation Examination.
2. Comparision of mean percent achievements among groups within subjects at Intermediate Examination.
3. Comparision of mean percent achievements among subjects within groups at Matriculation Examination.
4. Compraision of mean percent achievement among subjects within groups at Intermediate Examination.

P.T.O.101

From the table it is clear that the achievement in the subjects of English has a range of 15.1 percent The range is quite high, which clearly indicates that the the performance in the subject of English at the Matriculation Examination for various groups are hemogenious in the nature. We have, included in this study, the students who failed in the Intermediate Examination. The lowering of high limits clearly indicates that the students who failed in the Intermediate Examination score low marks in English at the Matriculation Examination.

In the case of Mathematics, the Highest achievements is 81.1 % with a range of 25.8. This indicates that there is much variation among the achievemen of this subjects. The highest achievements shows a great fall as compared with the achievements of Mathematics of the Matriuclation in the first category. This low achievem nts can be clearly attribulated to the inclusions of the students, who failed in the Intermediate Examination on their first attampt.

The highest achievements in the subject of Arithmatics of Household account is 62.2 % and the range in the achivements is 4.6 %. This range is very low and indicates that there is little variation among the achievements of the students in this subject. It also proves that girls achievements in this subject are balanced one.

P.T.O.103.

The range of variation in the case of the achievement in History and Geography is 4.9 which is two low, and indicates the hemogenity of the performance of the students in this subjects.

Only two groups of students have offered chemistry and Physics in the Matriculation Examination. The range between the two groups is fairly high, which means that there is much variation in the achivement of the students in this subject.

Similarly, in the subject oc civics and Hygine, the highest achivement is very low and the range is 9.4 %. Thus there is significan variation in the achievements of the students in this subject. The low limit in the achievements of this subject shows that students whose achievements are low in the subjects are poor achiever in the Intermediate examination.

The subject of Drawing has been taken by the Student of only one group hence the need for studying the variability does not arise.

In the subject of Sanskrit, the range in the achivements is 12.4%. This range is quite high., which means that there is much variation in the achivement of this subject. The achicement in this subject is the second best among all the subjects.

The subject of Hindi has a range of 6.6 per cent. The upper limit is 54.6 and the lower limit is 48.0. The range is low. Thus there is little variation among the achievement of Hindi. The very low achievement in this subject indicates that students, who fail at the Intermediate Examination have poor performance record in this subject at the Matriculation Examination. The same observation is true with the performance of Panjabi at the Matriculation Examination.

The highest achievement in the grand total of the Matriculation is 63.7 per cent and lowest one is 45.7 per cent. The range is 18.0 per cent, which shows that there is little homogenity among the grand total achievement. The low limit of achievement suggests that students whose achievements are low in the Matriculation are the probable failures at the Intermediate Examination. Thus much effort can be saved if we allow only those students who have high achievements in grand total as well as in the individual subjects.

To study further, the extent of variation among the subjects of Matriculation Examination for Category No.2, we shall compare their average achievement in all the groups, which is given in table No.6.2, at page 105.

From the figures of the said table, it is quite clear that the highest achievement is in the subject of Mathematics. The achievements in other subjects do not show much variation from this highest limit, which may lead us to the definite conclusion that the achievement of each subject has certain relationship with each other.

Table No. 6.2.

Average mean per cent achievement of various subjects for all the groups in Matriculation Examination, for Category No.2.

1.	English	57.2
2.	Mathematics	61.1
3.	Arithmetic and Household Accounts	60.0
4.	History and Geography	47.8
5.	Chemistry and Physics	46.9
6.	Civics and Hygiene	44.5
7.	Drawing	51.3
8.	Sanskrit	54.3
9.	Hindi	49.4
10.	Panjabi	52.9
11.	Total	52.2

Section No.2.

Comparison of mean percent achievement among groups within subjects at Intermediate Examination.

The table No. II.2(b) in the Appendix shows ~~that~~ the mean per cent achievement in different subjects in different groups at the Matriculation Examination. The comparison of mean per cent achievement among the groups within subjects can be done on the basis of the ranges of mean achievements in individual subjects, which are given in table No. 6.3 at page 106.

The highest mean per cent achievement in the subject of English is 38.9 per cent and the lowest is 29.3 per cent. This performance is the lowest. Generally the students fail in English at the Intermediate Examination. In the present study we have included about 5.27 candidates who failed in the Intermediate Examination. Most of them have failed in English.

This has affected the highest and the lowest achievement in this subject. The range of 9.6 per cent is not very high, which shows that there is little variability in the achievement of this subject.

Table No. 6.3.

Highest and lowest mean achievements in individual subjects at Intermediate Examination for all the groups in Category No.2.

S.No.	Subject	Upper limit	Lower limit	Range
1.	English	38.9	29.3	9.6
2.	Mathematics	56.4	52.7	3.7
3.	Chemistry	44.0	35.5	8.5
4.	Physics	40.4	39.4	1.0
5.	Economics	43.8	39.1	4.7
6.	History	43.6	36.8	6.8
7.	Civics and Elementary Political Science	44.0	37.7	6.3
8.	Sanskrit	66.2	56.7	[illegible] 9.5
9.	Hindi	44.0	37.8	6.2
10.	Panjabi	46.1	41.8	4.3
EY	Total	57.0	45.6	11.4

The subject of Mathematics has been taken up by only three groups of students. The range of their achievements is very low. Thus it is clear that there exists a homogeneity in the performance of Mathematics. The subjects of Physics and Chemistry have been taken up by two groups only. The variation in the subject of Chemistry is high whereas the achievement in the subject of Physics shows great homogeneity.

The subject of Economics shows little variation, with poor achievements on the whole. The cause of poor achievement in Economics have been discussed in the previous chapter.

The variation in the subject of History is not very high and thus there is homogeneousness in the achievement of History. Similar is the case with the achievement of Civics and Elementary Political Science in this Category.

The highest achievement in Sanskrit is 66.2 per cent and the lowest one is 56.7 per cent. This achievement is the highest in this category. The range of variation is 10.5 per cent, which shows that there is a little homogeneity in the achievement of this subject.

The achievement in the subject of Hindi and Panjabi shows little variation. The low performance in these two subjects suggests that students who take up these subjects have put in little efforts in these two subjects.

The highest mean per cent achievement in the grand total of Intermediate marks is 57.0 per cent and the lowest is 45.6 per cent. The range is the longest. Thus there is little homogeneity among the grand total achievements of different groups at Intermediate Examination.

In the above discussion we have seen that there exists some relationship among the groups within the subjects. To have a more clear idea, we shall compare the average achievements of the subjects for all the groups in Intermediate Examination. The following table No. 6.4 will show the average performance of the students in different subjects at Intermediate Examination.

Table No. 6.4.

Average achievement in per centage of the students in different subjects at Intermediate Examination for Category No.2.

No.	Subjects	Average achievements
1.	English	27.4
2.	Mathematics	44.7
3.	Chemistry	52.9
4.	Physics	58.5
5.	Economics	41.0
6.	History	40.9
7.	Civics and Elementary Political Science	40.4
8.	Sanskrit	57.3
9.	Hindi	43.5
10.	Panjabi	43.7
EY	Grand Total	49.0

From the above table it is clear that the highest average achievements at Intermediate Examination are in the subject of Physics. The achievements in other subjects do not show much variation. This fact is an ample proof that the achievement in each subject in Intermediate Examination are homogeneous in nature.

Section No.3.

Comparison of mean percent achievements among subjects within groups at Matriculation Examination.

To compare the mean per cent achievements among the subjects within groups, we have divided the groups of Category No.2 into following major groups :-

Major Group No.1. It consists of two groups having Physics and Chemistry as a common subject at Matriculation Examination.

Major Group No.2. It consists of three groups No. 3, 4 and 5, with Mathematics, Civics Hygiene and Hindi as the common subjects at Matriculation Examination.

Major Group No.3. It consists of three groups No.6, 7 and 8, with Mathematics, Civics Hygiene and Panjabi as the common subjects at Matriculation Examination.

Major Group No.4. It consists of two groups No.9 and 10 with Mathematics, Sanskrit and Hindi as common subjects at Matriculation Examination.

Major Group No. 5. It consists of three groups No.11, 12 and 13 with Arithmetic and Household Accounts, Civics Hygiene and Panjabi as common subjects at the Matriculation Examination.

Major Group No.6. It consists of three groups No. 14, 15 and 16, with Arithmetic and Household Accounts, Civics Hygiene and Hindi, as common subjects at the Matriculation Examination.

Major Group No.7. It consists of Group No.17 with Arithmetic and Household Accounts, Sanskrit and Hindi, as the common subjects at the Matriculation Examination.

Major Group No.1.

When we make a comparison among the mean achievements of various subjects of these groups, we find that the highest achievement is in the subject of Mathematics

Major Group No.2. When a comparison is made among the subjects of these groups, it is observed that there is a little difference of about 5 per cent between the mean achievement of English and other subjects of these groups. We thus conclude that there is little difference among the achievements of these groups.

Major Group No.3. While making a comparison of achievements of these three groups we find that there is a slight difference among the achievements of English, Panjabi and total marks. The highest mean per cent achievement is of Mathematics which shows a difference of about 17 per cent in average, with the achievements of other subjects. Thus it shows that there is a great difference among the achievement of these groups.

Major Group No.4. As we make a comparison among the mean achievements of these two groups, we observe that there is a difference of about 2 to 21 per cent among the achievements of these various subjects, which means that there exists some relationship among the achievements of different subjects of these groups.

Major Group No.5. When we make a comparison among the mean achievements of these three groups, we find that there exists a difference of 2 to 13 per cent among the achievements of various subjects, which shows that there

is much difference among the achievements of these groups.

Major Group No.6. When the mean achievements of the groups of this major group are compared, it is observed that there is little difference between the mean achievement of various subjects in this group. The highest achievements are in the subject of Arithmetic and Household.

Major Group No.7. There is only one group in this Major Group. The mean per cent achievement of each subject shows that there exists a certain relation among the achievements of individual subjects.

Section No.4.

Comparison of mean per cent achievements among subjects within groups at Intermediate Examination.

In this section we shall compare the mean per cent achievements of the subjects in the various groups and shall find if there exists any relationship among these subjects, at the Intermediate Examination.

Major Group No.1. The two groups have taken the same subjects at the Intermediate Examination. The highest achievement is in the subject of Mathematics and the lowest in English. Thus it is clear that the two groups do not show any distinct characteristics.

Major Group No.2. While making a comparison of the achievements of group No. 3, 4 and 5, we observed that the overall achievement of all the subjects is not very high. Thus the groups do not show any distinct characteristic in each subject.

Major Group No.3. When we compare the achievements of groups No.6, 7 and 8, we find that there is little difference between the achievements in the individual subjects.

MAJOR Group No.4. When a comparison is made among the mean achievements of different subjects, it shows a significant difference. In the subject of Sanskrit the achievements are the highest.

Major Group No.5. In these groups the mean achievements of various subjects do~~s~~ not show a significant difference. Only the achievements in the subject of English are too low.

Major Group No.6. When a comparison is made among the mean achievements of the groups of this major group, we find that there is little difference among the achievements of these subjects.

Major Group No.7. Here there is only one group, where the mean achievement of various subjects do not show much variation and thus they can be compared.

P.T.O.

Section No. 6.

Comparison of mean per cent achievements among subjects at Matriculation and Intermediate Examinations.

A comparative picture of the mean achievements in the different subjects in Intermediate and Matriculation Examinations can be had from the tables No. II-1(a) and 1(b) in Appendix A. How the students fare relatively well in the same subject as the Matriculation and Intermediate Examination can be clearly understood, if we compare their mean achievements of each subject at the two Examinations.

1. **English.** It is a compulsory subject at the two Examinations. The difference in the mean achievements at the two examinations is quite appreciable.

2. **Mathematics.** This subject is taken up only by three groups at the Intermediate Examination. There is a wide difference between the achievements in Mathematics of Intermediate Examination and Matriculation Examination. The great difference between the achievements in Mathematics at Intermediate and Matriculation in this category shows that the students who are probable failures do not take Mathematics,and their achievement in Matriculation being low.

3. **Chemistry.** There are only two groups who have taken Chemistry at the Intermediate Examination. The comparison between the achievement of Chemistry at Intermediate and Chemistry Physics at the Matriculation Examination denotes a wide difference, which leads us to the conclusion

that achievement in Chemistry in this Category are not very high, and hence the possibility of their failure at the Intermediate Examination.

4. Physics. The subject of Physics has also been offered by only ~~[illegible]~~ two groups. The achievement of Physics at Matriculation and Intermediate Examination shows a wide difference. This difference confirms our hypothesis that the poor achievement in the subject of Chemistry and Physics at Matriculation Examination is the probable cause of failure at Intermediate Examination.

5. Economics. The subject of Economics has been taken up by four groups of students. The mean achievement in the subject of Economics have been compared with the mean achievements of History and Geography at Matriculation Examination. There is an insignificant difference between the two.

6. History. Five groups of students have taken History as one of the subjects at the Intermediate Examination. The comparison of History at Intermediate Examination has been made with History and Geography of the Matriculation Examination. There is very little difference between the achievements at the two Examinations.

7. Civics & Elementary Political Science. The comparison of the achievements of Civics and Elementary Political Science at Intermediate Examination has been made with the achievements of Civics & Hygiene at the Matriculation Examination.

This subject is common only to five groups. The achievements in both the subjects at both the Examinations are identical.

8. Sanskrit. The subject of Sanskrit has been taken up only by three groups of students at Intermediate Examination. The achievements in this subject at the two Examinations are identical. The less number of students who are taking up Sanskrit indicates that lesser the students take up Sanskrit, the greater are the chances for their failures.

9. Hindi. The subject of Hindi has been taken up only by five groups of students at the Intermediate and Matriculation Examination. The difference between the two achievements is almost identical.

10. Panjabi. Panjabi as a subject has been taken up by seven groups of students at the Intermediate and Matriculation Examinations. The achievements at the two examinations in this subject are almost identical.

11. Grand Total. The grand total of Matriculation Examination is much higher as compared with the grand total marks of the Intermediate Examination. In this category we have included the candidates who have failed at the Intermediate Examination. Thus the steep decrease in the total marks of Intermediate Examination is explainable.

P.T.O.

Standard Deviation.

When we compare the Standard Deviation (Appendix A, Tables No. II - 1(b) and II - 2(b) for all the groups of category No.2, at the Intermediate and Matriculation Examination, it is found that although the mean achievement is decreasing, the variation of marks in the subjects are on the increase in almost all the subjects. This gives the impression that the students who fail at the Intermediate Examination have very low score to their credit at the Matriculation Examination. The very low mean percentage marks at the Intermediate Examination with a corresponding increase in the Standard Deviation is self-evident that when we admit student with low marks at the Matriculation Examination to the College education, we are admitting a probable failure.

CHAPTER NO. 7.

STUDY OF RELATIONSHIP OF MARKS FOR TWO YEARS ACHIEVEMENTS.

In the previous Chapter No.5, it was observed that a positive relationship of varying degree exists among the achievements of Matriculation, Intermediate and Degree Examinations. Therefore, conclusion can be drawn that achievements in Matriculation Examination can predict to some extent the achievements at Intermediate and Degree levels.

In the present chapter, it is proposed to study the relationship of marks for the Matriculation and Intermediate Examinations. Here also the average co-efficient of correlation for all the subjects at the two examinations has been calculated. The table showing the coefficient of correlations for each group for the study of the achievements for two years have been attached in Appendix B, II.1 to II.17.

For presentation, we have organised the result in the following three Sections:-

1. Comparison of coefficient of correlation among the achievements in individual subjects at the Matriculation Examination.
2. Comparison of coefficient of correlation among the achievements in individual subjects at the Intermediate Examination.
3. Comparison of coefficient of correlation between achievements in the subjects of Matriculation and Intermediate Examination.

Section No.1.

Average coefficient of correlation among the subjects for Matriculation Examination of Category No.2.

The average co-efficient of correlation among the subjects of Matriculation for all the groups of the Category No.2 is given in the table No. 7.1 below.

Table No. 7.1.

Average coefficient of correlation among
the subjects of Matriculation Examination
of Category No.2.

Subjects	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	EX
X1	-										
X2	.41	-									
X3	.46	-	-								
X4	.59	.41	.41	-							
X5	.50	.52	-	.38	-						
X6	.29	.42	.49	.36	-	-					
X7	.47	.56	-	.38	-	-	-				
X8	.43	.51	-	.45	.56	-	-	-			
X9	.49	.47	.55	.59	.43	.49	-	.61	-		
X10	.44	.53	.46	.64	-	.45	-	-	-	-	
EX	.51	.58	.43	.49	.57	.56	.51	.70	.56	.46	-

There are 41 coefficient of correlation and all are statistically significant, except one. We shall take each subject and shall study its relationship with other subjects of the Matriculation Examination.

The subject of English has the highest coefficient of correlation of +.59 with the subject of History and Geography of the Matriculation Examination. The next

highest coefficient of correlation is with the totalmarks. This indicates that the marks of English can be estimated from the score of other subject marks of the Matriculation.

The subject of Mathematics forms 8 coefficient of correlations with different subjects of Matriculation. All are statistically significant. The highest coefficient of correlation is with the total marks.

The subject of Arithmetic and Household Accounts has been taken up by the Girl candidates only. There are 5 coefficient of correlations with different subjects. All the coefficients are statistically significant. The highest coefficient is +.55 with Hindi. This shows that the subject of Hindi is popular with the Girl students.

The subject of History and Geography forms 10 coefficient of correlations with different subjects of Matriculation. The highest coefficient of correlation is +.59 with English and Hindi both, and the lowest of +.36 with Civics and Hygiene. This indicates that Civics and Hygiene is a poor predictor for the achievements of History and Geography.

The subject of Chemistry and Physics forms six co-efficient of correlations with different subjects of Matricula tion. The highest coefficient of correlation is +.57 with the total marks of the Matriculation, which shows that from the achievements of Chemistry & Physics, we can estimate the total marks of the Matriculation Examination.

There are eight coefficient of correlation between the subjects of Civics and Hygiene and other subjects of the Matriculation. The highest coefficient of correlation is +.56 with the total marks of the Matriculation and the lowest of +.29 with the achievements of English.

The subject of Drawing achievements forms only four coefficient of correlation. The highest coefficient of correlation is +.56 with the achievements of Mathematics. This confirms our previous remarks that the subject of Drawing and Mathematics are complementary to each other.

The subject of Sanskrit has the highest coefficient of correlation of +.70 with the total marks. Thus we can say that the prediction of total marks of Matriculation can be made from the achievement of this subject.

The subject of Hindi forms 8 coefficient of correlation with various subjects of the Matriculation Examination. The highest coefficient of correlation of +.61 is with the subject of Sanskrit, which shows that an estimate of Hindi achievements can be made from all the subjects of Matriculation Examination.

The subject of Panjabi forms seven coefficient of correlation with various subjects of Matriculation Examination. The highest co-efficient of correlation of +.56 is with the total achievements.

In the case of the total marks of the Matriculation Examination, the highest coefficient of correlation of +.70 is with the subject of Sanskrit and the lowest one +.43 is with the Arithmetic and Household Accounts.

Section No. 2.

Average coefficient of correlation among the subjects of Intermediate Examination of Category No.2.

The average coefficient of correlation among the subjects of Intermediate Examinations for all the groups of Category No.2 is given in Table No. 7.2 at page 121.

Table No. 7.2.

Average coefficient of correlation among the subjects for the Intermediate Examination of Category No.2.

Subjects	Y1	Y2	Y 3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	EY
Y1	-										
Y2	.27	-									
Y3	.35	.33	-								
Y4	.39	.39	.41	-							
Y5	.41	-	-	-	-						
Y6	.40	-	-	-	-	-					
Y7	.37	-	-	-	-	-	-				
Y8	.50	-	-	-	.49	-	.49	-			
Y9	.35	-	-	-	.37	.43	.33	.49	-		
Y10	.40	-	-	-	.42	.40	.48	-	-	-	
EY	.43	.40	.37	.44	.41	.45	.41	.50	.39	.41	-

There are 31 coefficient of correlation among the subjects of Intermediate Examination. All are positive and statistically significant. To know the coefficient of correlation for each subject with other subjects at Intermediate Examination, we shall take each subject individually.

1. English. It forms 10 coefficient of correlations with different subjects. The highest coefficient of correlation of +.50 is with the subject of Sanskrit and the lowest of +.35 is with the subject of Arithmetic and Household Accounts, which shows that the major portion

of the students who fail at Intermediate Examination in English are girls who have taken up Arithmetic and Household Accounts at their Matriculation Examination.

2. Mathematics. The subject of Mathematics of the Intermediate has four coefficient of correlation. They do not show any high significance. Thus it may be assumed that the subject of Mathematics has little value in predicting the scores of the other subjects of the Intermediate Examination.

3. Chemistry. The subject of Chemistry of Intermediate Examination forms only four coefficient of correlation. The highest is +.41 with the Physics. We can infer that the achievement of Chemistry can be predicted with greater efficiency from the marks of the Physics at Intermediate Examination.

4. Physics. Physics has the same performance with that of Chemistry and thus both Chemistry and Physics depend upon each other for the purpose of performance and prediction of marks.

5. Economics. The subject of Economics at Intermediate Examination has the highest coefficient of correlation of +.49 with that of Sanskrit and the lowest of +.47 with Hindi.

6. History. The subject of History at Intermediate Examination has only four coefficient of correlation. The highest among them is +.48 with the total marks, and the lowest is +.40 with the marks of English.

7. Civics & Elementary Political Sciende. The subject of Civics & Elementary Political Science has five coefficient of correlation with other subjects of the Intermediate Examination. The highest coefficient is +.48 with the

8. Sanskrit. The subject of Sanskrit has got five coefficient of correlation with different subjects of Intermediate Examination. All the coefficients are of equal degree, which shows that the subject of Sanskrit can tell the achievements of other subjects.

9. Hindi. The subject of Hindi has got six coefficient of correlation with different subjects of Intermediate Examination. The highest coefficient of correlation is +.49 with Sanskrit achievement, and the lowest of +.33 with Civics and Elementary Political Science.

10. Punjabi. The subject of Punjabi bears five coefficient of correlation with the various subjects of Intermediate Examination. The highest coefficient is +.48 with Civics and Elementary Political Science.

11. Total Marks. There are 10 co-efficient of correlation between the Total Marks and the various other subjects of Intermediate Examination. All these coefficient of correlation indicate different degrees of relationship with other subjects.

Section No.3.

Comparison of coefficient of correlation between the achievements in the subjects of Matriculation and Intermediate Examinations.

The average coefficient of correlation among the subjects of Matriculation and Intermediate Examinations for all the groups of Category No.2 are given in the table No.7.2 on page 124. There are 93 coefficient of correlation, all are statistically significant.

Table No. 7.3.

Average coefficient of correlation among the subjects of Matriculation and Intermediate Examination of Category No.2.

Subjects	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	EY
X1	.42	.53	.44	.45	.40	.49	.63	.48	.42	.46	.48
X2	.37	.51	.49	.43	.46	.53	.54	.58	.71	.43	.46
X3	.37	-	-	-	.46	.51	.56	.46	.43	.51	.53
X4	.40	.56	.51	.37	.35	.48	.39	.41	.40	.49	.41
X5	.54	.63	.43	.46	-	-	-	-	-	-	.46
X6	.50	-	-	-	.43	.35	.49	-	.48	.46	.45
X7	.47	.53	.47	.45	.47	-	-	-	.51	-	.44
X8	.52	.59	.63	.48	.51	-	.53	.62	-	-	.63
X9	.45	.61	.58	.49	.43	.42	.49	.63	.51	-	.41
X10	.51	.49	.47	.53	.50	.46	.54	-	-	.59	.55
EX	.48	.40	.45	.49	.41	.53	.51	.47	.46	.46	.51

We shall see the coefficient of correlation between individual predictor and the criteria.

1. Matriculation English. There are eleven coefficient of correlation of Matriculation English with different Intermediate subjects. The range is .09, which shows that English ~~each~~ subject of Matriculation ~~Intermediate~~ Examination has the potentiality of predicting the ~~English~~ marks of Intermediate Examination, in each subject.

2. Matriculation Mathematics. There are 11 co-efficient of correlation of Matriculation Mathematics with different Intermediate subjects. The range is .34, which is too big, and indicates

that the subject of Matriculation Mathematics has little potentiality of predicting the marks of Intermediate Examination.

3. Matriculation Arithmetic & Household Accounts. This subject has 9 coefficient of correlation with other subjects of Intermediate Examination. The range is .21. This means that the subject of Arithmetic and Household Accounts is a fair predictor of Intermediate achievements.

4. Matriculation History & Geography. This subject forms 11 coefficient of correlation with various other subjects of Intermediate Examination. There is a small range i.e. .14. This shows that the subject of History and Geography can be used for predicting the marks of other subjects at Intermediate Examination.

5. Matriculation Physics and Chemistry. It forms six coefficient of correlation with various subjects of Intermediate Examination. The range is .20, which indicates that on the performance of Physics and Chemistry at Matriculation, we can assess the achievements of other subjects at Intermediate Examination.

6. Matriculation Civics & Hygiene. This subject has got 8 coefficient of correlation with different subjects of Intermediate Examination. The range ~~xx~~ is .07, which is very low. The upper limit indicates that it has got a significant relationship with achievements of English at Intermediate Examination.

7. Matriculation Drawing. The subject of Matriculation Drawing has got seven coefficient of correlation The range of correlation is .10, which is very small and indicates that the achievements of Drawing can foretell the achievements in other subjects of Intermediate Examination.

8. Matriculation Sanskrit. This subject has got 8 coefficient of correlation. The highest is .63 with the total achievement of Intermediate Examination. The range is .15, which indicates that almost all the subjects of the Intermediate Examination can be predicted from the achievement of Matriculation Sanskrit.

9. Matriculation Hindi. This subject has got 10 coefficient of correlation. The highest is .63 with the Intermediate Sanskrit. All the coefficient of correlation indicate the degree of predictability.

10. Matriculation Panjabi. This subject has got 9 coefficient of correlation. The highest coefficient is .59 with the Intermediate Panjabi. All these coefficients are significant.

11. Matriculation Total Marks. The Matriculation Total Marks have a coefficient of correlation with each subject of the Intermediate Examination. All the correlations are significant and can predict the achievement of each subject with varying degrees.

Chapter No.8.

Prediction of Degree and Intermediate marks from the marks of the Matriculation Examination.

In the foregoing discussion, we have established that there exists a relationship among the marks of individual subjects at the three examinations, which leads us to the conclusions that the marks of one subject can be predicted from the marks of the same subject but at another Examination.

The present study deals with predicting of Matriculation Examination. Thus the subjects and grand total of the Matriculation Examination has been used as predicters and the subjects and grand total marks at the Intermediate and Degree Examinations are criteria.

In order to present the results in a simple way, we shall discuss each predictor relation with individual criteria separatel y.

We know the coefficient of correlation and standard deviation of each subject at the three examinations. By using a regression equation, we find the probable marks of one subject from the marks of other subjects. Thus we can test the probable success of an individual candidate who plans to enter the college. Selection on such a basis is measurably better than any subjective judgments.

1. Prediction of scores in Intermediate English.

The table No. 8.1 gives the coefficient of correlation along with the Standard of Error (E) for predicting the scores of Intermediate English from the scores of different subjects of Matriculation. Table No. 8.1 is given at page 128 following

Table No. 8.1.

Individual predictors correlation with Intermediate English and their Standard of Error (E) for total groups of Category No.1.

Predictor	r	E
Y1 on X1	.53	13.2
Y1 on X2	.59	12.4
Y1 on X3	.55	12.9
Y1 on X4	.54	13.1
Y1 on X5	.51	13.4
Y1 on X6	.60	12.3
Y1 on X7	.61	12.2
Y1 on X8	.62	12.1
Y1 on X9	.56	12.7
Y1 on X10	.54	13.1
Y1 on EX	.51	13.4

It is evident from the above figures that the co-efficient of correlation between Intermediate English and Matriculation Sanskrit is the highest. The standard of Error is 12.1 per cent which is the lowest. The above table also denotes that the total marks of the Matriculation Examination do not predict the marks of the Intermediate English correctly.

Prediction of scores in Intermediate Mathematics.

The scores of Mathematics at the Intermediate Examination can be predicted by 9 subjects of the Matriculation Examination. Here the possibility of predicting the Intermediate Mathematics scores from the marks of Matriculation Hindi is the highest,

r being .73, and E is only 5.4. The range of error for all the subjects of Matriculation Examination is 6.8 - 5.4, which is too low and is evident from the table No. 8.2 given below.

Table No. 8.2.

Individual Predictors correlation with Intermediate Mathematics and their Standard of Error (E) for total groups of Category No.1.

Predictor	r	E
Y 2 on X1	.57	6.5
Y2 on X2	.61	6.4
Y2 on X4	.58	6.5
Y2 on X6	.71	5.6
Y2 on X7	.59	6.5
Y2 on X8	.61	6.4
Y2 on X9	.73	5.4
Y 2 on X10	.51	5.8
Y2 on EX	.55	6.8

3. Prediction of Scores in Intermediate Chemistry.

With regard to the prediction of scores in Intermediate Chemistry from the Matriculation subjects, it is noticed that only 8 subjects of Matriculation Examination can possibly predict the scores of Intermediate Chemistry. The value of prediction is the highest for the subject of Chemistry and Physics of the Matriculation as the Error of Prediction for this subject is only 6.2 per cent given in the table No. 8.3 at page 130.

From the figures of the said table it is clear that all the Matriculation subjects can be used for predicting the Chemistry scores at the Intermediate Examination.

Table No. 8.3

Individual Predictors correlation with Intermediate Chemistry and their standard of Error (E) for total groups of Category No.1.

Predictors	r	E
Y3 on X1	.68	7.4
Y3 on X2	.71	7.0
Y3 on X4	.59	8.1
Y3 on X5	.75	6.2
Y3 on X7	.54	8.4
Y3 on X8	.61	8.3
Y3 on X9	.57	8.2
Y3 on X10	.64	7.2
Y3 on EX	.54	8.4

4. Prediction of scores in Intermediate Physics.

With regard to the prediction of scores in Intermediate Physics from the scores of different subjects at Matriculation Examination, it is clear from table No. 8.4 that the Intermediat Physics is an effective predictor. The effectiveness is the highest in the case of Mathematics of Matriculation Examination and lowest with the subject of Drawing at Matriculation.

It is also clear from table No. 8.4 that the Error of Prediction is not so high with all the Predictors, which leads us to the conclusion that achievement of Physics at Intermediate Examination can be predicted from all the subjects of Matriculation Examination. Table No.8.4 follows at the next page.

P.T.O.

Table No. 8.4.

Individual Predictors correlation with Intermediate Physics and their Standard of Error (E) for total groups of Category No.1.

Predictors	r	E
Y4 on X1	.59	9.6
Y4 on X2	.71	8.4
Y4 on X4	.59	9.6
Y4 on X5	.59	9.6
Y4 on X7	.45	10.8
Y4 on X8	.57	9.7
Y4 on X9	.59	9.6
Y4 on X10	.65	8.5
Y4 on EX	.49	9.8

5. Prediction of scores in Intermediate Economics.

As for the prediction of scores in Intermediate Economics from the scores of various subjects of Matriculation is concerned, it can be observed in Table No. 8.5 that the most effective predictor for the Intermediate Economics is Civics & Hygiene of the Matriculation Examination, as the efficiency indices is the lowest here. The subjects of Panjabi and Arithmetic and Household Accounts of the Matriculation Examination do not possess high effectiveness of predicting the marks of Intermediate Economics.

Table No. 8.5 follows at page 132.

Table No.8.5.

Individual Predictors correlation with Intermediate Economics and their Standard of Error (E) for total groups of Category No.1.

Predictors	r	E
Y5 on X1	.56	10.7
Y5 on X2	.53	10.9
Y5 on X3	.47	11.4
Y5 on X4	.52	11.0
Y5 on X6	.64	9.8
Y5 on X7	.61	10.4
Y5 on X8	.62	10.1
Y5 on X9	.61	10.4
Y5 on X10	.43	11.7
Y5 on EX	.45	10.5

6. Prediction of Scores in Intermediate History.

Only 7 subjects of Matriculation Examination have the potentiality of predicting the scores of Intermediate History. The lowest Standard of Error is 10.2 per cent with History and Geography of the Matriculation Examination. From the table No. 8.6 it is evident that all the subjects of Matriculation can predict the marks of Intermediate History.

Table No.8.6

Individual Predictors correlation with Intermediate History and their Standard of Error (E) for total groups of Category No.1.

Predictors	r	E
Y6 on X1	.51	11.0
Y6 on X2	.59	10.6
Y6 on X3	.49	11.3
Y6 on X4	.62	10.2
Y6 on X6	.50	11.1
Y6 on X9	.49	11.3
Y6 on X10	.54	10.9
Y6 on EX	.41	11.8

7. Prediction of Scores in Intermediate Civics & Elementary Political Science.

As regards the prediction of scores of Civics and Elementary Political Science of the Intermediate Examination, there are eight Matriculation subjects from which an estimate of achievement of this subject can be made. The coefficient of correlation, along with the Standard of Error, are given in the Table No. 8.7 below. It is evident from the table that the subject of Hindi has the highest potentiality of predicting the marks of Civics and Elementary Political Science.

Table No. 8.7.

Individual Predictors correlation with Intermediate Civics and Elementary Political Science and their Standard of Error (E) for total groups of Category No.1.

Predictors	r	E
Y7 on X1	.52	9.8
Y7 on X2	.57	9.5
Y7 on X3	.41	10.5
Y7 on X4	.44	10.1
Y7 on X6	.57	9.5
Y7 on X8	.51	9.9
Y7 on X9	.68	8.4
Y7 on X10	.47	10.2
Y7 on EX	.52	9.8

8. Prediction of Scores in Intermediate Sanskrit.

The scores of Intermediate Sanskrit can be predicted by 6 subjects of Matriculation Examination. The possibility of predicting the Intermediate Sanskrit score is the highest in the case of Matriculation Sanskrit, as the r is .74 and E is only 7.9 per cent. The error of prediction with other subjects is given in the Table No. 8.8 at page 134.

P.T.O.

Table No. 8.8

Individual Predictors Correlation with Intermediate Sanskrit and their Standard of Error (E) for total groups of Category No.1.

Predictors	r	E
Y8 on X1	.55	9.6
Y 8 on X2	.56	9.6
Y8 on X3	.57	9.5
Y8 on X4	.50	9.9
Y8 on X8	.74	7.9
Y8 on X9	.41	10.6
Y8 on EX	.55	9.5

9. Prediction of Scores in Intermediate Hindi.

As regards the Prediction of Scores in Intermediate Hindi from the other subjects of Matriculation Examination, it is observed from the table No. 8.9 that there are 7 Matriculation subjects which can predict the Hindi achievements at Intermediate Examination. The most effective predictor is Matriculation Sanskr Further the subject of A rithmetic and House-hold Accounts seems to be poor predictor.

Table No. 8.9.

Individual predictors correlation with Intermediate Hindi and their Standard of Error (E) for the total groups of Category No. 1.

Predictors	r	E
Y9 on X1	.45	8.7
Y9 on X2	.63	7.7
Y 9 on X3	.43	8.6
Y9 on X4	.52	8.2
Y9 on X6	.55	8.0
Y9 on X7	.71	6.8
Y9 on X9	.57	7.8
Y9 on EX	.52	8.2

10. Prediction of scores in Intermediate Panjabi.

With regard to the correlation between the Intermediate Panjabi and the other subjects of the Matriculation which are given in the table No. 8.10, it is evident that only six subjects of Matriculation can assess the achievements of Panjabi at Intermediate Examination. It is evident from Table No. 8.10 that all the six subjects of Matriculation can predict the marks of Panjabi at Intermediate with a fair amount of accuracy.

Table No. 8.10.

Individual Predictors Correlation with Intermediate Panjabi and their Standard of Error (E) for total groups of Category No.1.

Predictors	r	E
Y10 on X1	.59	8.6
Y10 on X2	.50	9.2
Y10 on X3	.57	8.8
Y10 on X4	.52	9.1
Y10 on X6	.53	9.0
Y10 on X10	.74	7.2
Y10 on EX	.57	8.8

11. Prediction of scores in Intermediate Total Marks.

As for the prediction of total scores in Intermediate Examination from the scores of different subjects of Matriculation Examination are concerned, the Table No. 8.11 shews that the lowest Standard of Error is 10.4 per cent between the total marks of the Intermediate Examination and the total marks of the Matriculation Examination. The subject of Sanskrit secures second position in terms of predictive efficiency among all the subjects. Table No. 8.11 is given

Table No. 8.11.

Individual Predictors Correlation with Intermediate Total Marks and their Standard of Error (E) for total groups of Category No.1.

Predictors	r	E
EY on X1	.53	11.6
EY on X2	.53	11.6
EY on X3	.46	12.1
EY on X4	.53	11.6
EY on X5	.52	11.7
EY on X6	.56	11.2
EY on X7	.49	12.0
EY on X8	.57	11.1
EY on X9	.51	11.8
EY on X10	.55	11.4
EY on EX	.64	10.4

From the above discussion, it is clear that the achievements of all the subjects at Intermediate Examination can be predicted from the achievements of various Matriculation subjects. Similarly we can predict the achievements of the Degree subjects from the achievements of the Matriculation subjects. For the sake of ready reference we give below the Standard of Error (E) along with the coefficient of correlation of Degree subjects with various subjects of Matriculation. By referring to these tables, we can easily calculate the probable achievements of a particular student at the Degree Examination. Tables No. 8.12 to 8.22 are given on the followin pages.

Table No. 8.12.

Individual Predictors Correlation with Degree English and their Standard of Error (E) for total groups of Category No.1.

Predictors	r	E
Z1 on X1	.46	13.7
Z1 on X2	.49	13.5
Z1 on X3	.56	12.9
Z1 on X4	.60	12.4
Z1 on X5	.61	12.4
Z1 on X6	.52	13.6
Z1 on X7	.58	12.5
Z1 on X8	.46	13.7
Z1 on X9	.45	13.8
Z1 on X10	.49	13.5
Z1 on EX	.46	13.7

Table No. 8.13.

Individual Predictors Correlation with Degree Mathematics and their Standard of Error (E) for total groups of Category No.1.

Predictor	r	E
Z2 on X1	.57	6.3
Z2 on X2	.69	5.5
Z2 on X4	.68	5.6
Z2 on X5	.67	5.6
Z2 on X7	.40	7.0
Z2 on X8	.45	6.9
Z2 on X9	.81	4.5
Z2 on X10	.42	6.9
Z2 on EX	.49	6.6

Table No. 8.14.

Individual Predictors Correlation with Degree Mathematics A Course and their Standard of Error (E) for total groups of Category No.1 .

Predictors	r	E
Z3 on X1	.46	6.2
Z3 on X2	.64	5.4
Z3 on X4	.61	5.7
Z3 on X5	.52	6.0
Z3 on X7	.53	5.9
Z3 on X8	.57	5.8
Z3 on X9	.58	5.7
Z3 on EX	.47	6.2

Table No. 8.15.

Individual Predictors Correlation with Degree Mathematics B Course and their Standard of Error (E) for total groups of Category No. 1.

Predictors	r	E
Z4 on X1	.47	13.6
Z4 on X2	.60	12.4
Z4 on X4	.62	12.3
Z4 on X5	.64	12.2
Z4 on X7	.63	12.3
Z4 on X8	.49	13.5
Z4 on X9	.55	12.8
Z4 on EX	.48	13.5

Table No. 8.16.

Individual Predictors Correlation with Degree Chemistry and their Standard of Error (E) for total groups of Category No.1.

Predictors	r	E
Z5 on X1	.65	8.5
Z5 on X2	.65	8.5
Z5 on X4	.72	7.8
Z5 on X5	.71	7.7
Z5 on X7	.59	9.0
Z5 on X8	.53	9.4
Z5 on X9	.51	9.6
Z5 on X10	.56	9.2
Z5 on EX	.51	9.6

Table No. 8.17

Individual Predictors correlation with Degree Physics and their Standard of Error (E) for total groups of Category No.1.

Predictors	r	E
Z6 on X1	.61	7.8
Z6 on X2	.66	7.3
Z6 on X4	.69	7.0
Z6 on X5	.66	7.3
Z6 on X7	.41	8.9
Z6 on X8	.57	8.0
Z6 on X9	.69	7.0
Z6 on X10	.65	7.4
Z6 on EX	.46	8.6

Table No. 8.18

Individual Predictors Correlation with Degree Economics and their Standard of Error (E) for total groups of Category No.1.

Predictors	r	E
Z7 on X1	.48	11.1
Z7 on X2	.56	10.6
Z7 on X3	.40	11.6
Z7 on X4	.54	10.7
Z7 on X6	.55	10.6
Z7 on X7	.55	10.6
Z7 on X8	.52	10.8
Z7 on X9	.49	10.9
Z7 on X10	.49	10.9
Z7 on EX	.50	10.9

Table No.8.19.

Individual Predictors Correlation with Degree History and their Standard of Error (E) for Total Groups of Category No.1.

Predictors	r	E
Z8 on X1	.64	8.5
Z8 on X2	.63	8.5
Z8 on X3	.68	8.2
Z8 on X4	.54	9.5
Z8 on X6	.57	9.3
Z8 on X9	.46	10.1
Z8 on X10	.59	9.2
Z8 on EX	.51	9.7

Table No. 8.20.

Individual Predictors Correlation with Degree Political Science and their Standard of Error (E) for Total Groups of Category No.1.

Predictors	r	E
Z9 on X1	.60	9.6
Z9 on X2	.46	10.5
Z9 on X3	.56	9.9
Z9 on X4	.48	10.4
Z9 on X6	.64	9.1
Z9 on X8	.56	9.9
Z9 on X9	.55	9.9
Z9 on X10	.51	10.3
Z9 on EX	.61	9.6

Table No. 8.21.

Individual Predicters Correlation with Degree Sanskrit and their Standard of Error (E) for Total Groups of Category No.1.

Predictors	r	E
Z10 on X1	.58	11.5
Z10 on X2	.57	11.6
Z10 on X3	.57	11.6
Z10 on X4	.56	11.8
Z10 on X6	.58	11.5
Z10 on X9	.52	12.1
Z10 on EX	.64	10.8

Table No. 8.22.

Individual Predictors Correlation with Degree Total Marks and their Standard of Error (E) for total groups of Category No.1.

Predictors	r	E
EZ on X1	.49	8.7
EZ on X2	.49	8.7
EZ on X3	.54	8.4
EZ on X4	.50	8.6
EZ on X5	.48	8.7
EZ on X6	.55	8.3
EZ on X7	.42	9.0
EZ on X8	.48	8.7
EZ on X9	.54	8.4
EZ on X10	.49	8.7
EZ on EX	.65	7.6

CHAPTER NO.9.

Conclusions and Recommendations.

The results of the inquiry indicates that the students who offer Science subjects at Matriculation, Intermediate and Degree Examinations show much improved results than the students who take up Art subjects at these examinations.

Thus the forecasting value of the predictors, English, Mathematics and Physics Chemistry of the Matriculation Examination is much greater than the forecasting efficiency of other subjects like Hindi, Panjabi, Drawing and Civics Hygiene.

The students who score very high marks at the Matriculation Examination are also a positive case for the pursuing of College studies. It has been observed that the achievements of the students at the Intermediate and Degree Examination shows a decreasing trend, but in no case a failure.

As a single predictor, the forecasting value of Sanskrit is the highest among all the Matriculation subjects. We have observed throughout our enquiry that achievements in Sanskrit at Matriculation show a very high correlation with the achievements of other subjects at the Intermediate and Degree Examinations.

The high achievements of English at Matriculation Examination are not the true indicators of the student's ability to achieve high marks in English at the Intermediate and Degree Examinations

The high achievements in Mathematics are the sure indicators that the student will achieve high marks in the subject of Mathematics at the Intermediate and Degree Examination.

In case of girl candidates, the high achievements in the subject of Arithmetic and Household Accounts does not predict the high achievements of the girls at the Intermedia and Degree Examination as a whole. It has come to our notice that the girl students show a steady progress in their achievements at the three examinations. Their achievement in the subject of Matriculation English has a positive and high correlation with the achievements of English and other subjects at the Intermediate and Degree Examinations.

Thus it is recommended that to decrease the rate of failure among the girl students the high achievements in the subject of Arithmetic and Household Accounts may be considered as the true indicator of high achievement at Intermediate and Degree Examinations.

The subject of History and Geography has little potentiality to predict the success of the students at Intermediate and Degree Examinations. There is some positive correlation among the achievements of this subject and some other subjects at the Degree Examination. In no case the correlation is high among the achievements of History and Geography and other social science subjects at the Intermediate Examination.

If the marks at the Matriculation Examination are ~~in~~ to be considered for the admission to College education, it would suffice to give admission to the students on the basis of their total achievements at Matriculation Examination and the achievements made in the individual subjects like English, Mathematics, Arithmetic and Household Accounts, Chemistry and Physics, and Sanskrit at the Matriculation Examination.

The above facts indicate that for the better results and to avoid any wastage in the education at College stage, it is better to admit students in the College who have offered Chemistry and Physics as one of their Elective Subjects at the Matriculation Examination. The forecastin efficiency of this subject is much higher than that of any other subject of the Matriculation Examination.

The marks at the Matriculation Examination have been considered for admitting the students to the Intermediate Class. It is evident from the Chapter on Correlation that although the subjects of Matriculation Examination have a significant and positive correlation with the subjects of Intermediate and Degree Examinations, yet none of them bears any perfect correlation and thus ~~[illegible]~~ cannot predict the future success with ease and accuracy. We, therefore, conclude that the achievements of Matriculation Examination are not the true indicators of success of a student at College stage. However, we may regard it with certainty that some students enter University with insufficient equipment for success and research must continue into the ways of predicting these likely failures. The evidence is that Matriculation results are undoubtedly not the best single predictors of possible performance at University stage.

Thus it is necessary to have some other valid and reliable tools for scholastic aptitude tests designed to measure the ability required for the pursuit of studies at the College Stage, and thus some additional criteria for admission to the College courses may be evolved.

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APPENDICES

APPENDIX A.

I - 1(a) Mean achievement of students at the Matriculation Examination for Category No.1.

I - 1(b) Standard Deviation in the achievements of the student at Matriculation Examination for Category No.1.

I - 2(a) Mean achievement of students at the Intermediate Examination for Category No.1.

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I - 3(a) Mean achievement of the students at the Degree Examination for Category No.1.

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II - 1(a) Mean achievement of students for each subject at the Matriculation Examination for Category No.2.

II - 1(b) Standard Deviation in the achievement of the students at Matriculation Examination for Category No.2.

II - 2(a) Mean achievement of students at the Intermediate Examination for Category No.2.

II - 2(b) Standard Deviation in the achievements of the students at Intermediate Examination for Category No.2.

APPENDIX B.

I. 1. Co-efficient of Inter-correlation among the subjects of Matriculation, Intermediate and Degree Examinations.
Group No.1. N = 145.

I. 2. Co-efficient of Inter-correlation among the subjects of Matriculation, Intermediate and Degree Examinations.
Group No.2. N = 33.

I. 3. Co-efficient of Inter-correlation among the subjects of Matriculation, Intermediate and Degree Examinations.
Group No.3. N = 174.

I. 4. Co-efficient of Inter-correlation among the subjects of Matriculation, Intermediate and Degree Examinations.
Group No. 4. N = 37.

I.5. Co-efficient of Inter-correlation among the subjects of Matriculation, Intermediate and Degree Examinations.
Group No.5. N = 27.

I. 6. Co-efficient of Inter-correlation among the subjects of Matriculation, Intermediate and Degree Examinations.
Group No.6. N = 84.

I. 7. Co-efficient of inter-correlation among the subjects of Matriculation, Intermediate and Degree Examinations.
Group No. 7. N = 60.

I. 8. Co-efficient of inter-correlation among the subjects of Matriculation, Intermediate and Degree Examinations.
Group No. 8. N = 58.

I. 9. Co-efficient of inter-correlation among the subjects of Matriculation, Intermediate and Degree Examinations.
Group No. 9. N = 47.

APPENDIX B (Contd.)

1. 10. Co-efficient of inter-correlation among the subjects of Matriculation, Intermediate and Degree Examinations.
Group No. 10. N = 33

I. 11. Co-efficient of inter-correlation among the subjects of Matriculation, Intermediate and Degree Examinations.
Group No. 11. N = 27

I. 12. Co-efficient of inter-correlation among the subjects of Matriculation, Intermediate and Degree Examinations.
Group No. 12. N = 26

I. 13. Co-efficient of inter-correlation among the subjects of Matriculation, Intermediate and Degree Examinations.
Group No. 13. N = 24

I. 14. Co-efficient of inter-correlation among the subjects of Matriculation, Intermediate and Degree Examinations.
Group No. 14. N = 55

I. 15. Co-efficient of inter-correlation among the subjects of Matriculation, Intermediate and Degree Examinations.
Group No. 15. N = 32

I. 16. Co-efficient of inter-correlation among the subjects of Matriculation, Intermediate and Degree Examinations.
Group No. 16. N = 53

I. 17. Co-efficient of inter-correlation among the subjects of Matriculation, Intermediate and Degree Examinations.
Group No. 17. N = 24

I. 18. Co-efficient of inter-correlation among the subjects of Matriculation, Intermediate and Degree Examinations.
Group No. 18. N = 45

I. 19. Co-efficient of inter-correlation among the subjects of Matriculation, Intermediate and Degree Examinations.
Group No. 19. N = 76

I. 20. Co-efficient of inter-correlation among the subjects of Matriculation, Intermediate and Degree Examinations. Group No. 20. N = 131.

I. 21. Co-efficient of inter-correlation among the subjects of Matriculation, Intermediate and Degree Examinations. Group No. 21. N = 84.

I. 22. Co-efficient of inter-correlation among the subjects of Matriculation, Intermediate and Degree Examinations. Group No. 22; No.=64.

II. 1. Co-efficient of correlation between the subjects of Matriculation and Intermediate Examinations for Group No. 1. N = 210.

II. 2. Co-efficient of correlation between the subjects of Matriculation and Intermediate Examinations for Group No. 2. N = 286.

II. 3. Co-efficient of correlation between the subjects of Matriculation and Intermediate Examinations for Group No. 3. N = 118.

II. 4. Co-efficient of correlation between the subjects of Matriculation and Intermediate Examinations for Group No. 4. N = 110.

II. 5. Co-efficient of correlation between the subjects of Matriculation and Intermediate Examinations for Group No. 5. N = 99.

II. 6. Co-efficient of correlation between the subjects of ~~Matrixmix~~ Matriculation and Intermediate Examinations for Group No. 6. N = 62.

II. 7. Co-efficient of correlation between the subjects of Matriculation and Intermediate Examinations for Group No. 7. N = 49.

II. 8. Co-efficient of correlation between the subjects of Matriculation and Intermediate Examinations for Group No. 8. N = 30.

II. 9. Co-efficient of correlation between the subjects of Matriculation and Intermediate Examinations for Group No. 9. N = 55.

II. 10. Co-efficient of correlation between the subjects of Matriculation and Intermediate Examinations for Group No. 10. N = 101.

II. 11. Co-efficient of correlation between the subjects of Matriculation and Intermediate Examinations for Group No. 11. N = 84.

II. 12. Co-efficient of correlation between the subjects of Matriculation and Intermediate Examinations for Group No. 12. N = 42.

II. 13. Co-efficient of correlation between the subjects of Matriculation and Intermediate Examinations for Group No. 13. N = 75.

II. 14. Co-efficient of correlation between the subjects of Matriculation and Intermediate Examinations for Group No. 14. N = 116.

II. 15. Co-efficient of correlation between the subjects of Matriculation and Intermediate Examinations for Group No. 15. N = 196.

II. 16. Co-efficient of correlation between the subjects of Matriculation and Intermediate Examinations for Group No. 16. N = 141.

II. 17. Co-efficient of correlation between the subjects of Matriculation and Intermediate Examinations for Group No. 17. N = 32.

APPENDIX A.

Table No. II - 1 (a).

Mean achievements of the students for each subject at the Matriculation Examination for Category No.2.

No.of Group	No. of candidates.	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	ΣX
1.	210	62.5	81.1	-	58.5	52.5	-	54.8	-	-	-	63.7
2.	285	46.5	78.7	-	41.2	41.4	-	-	-	42.1	-	57.2
3.	118	47.4	65.8	-	44.0	-	40.7	-	-	47.7	-	47.2
4.	110	50.4	67.3	-	46.2	-	40.2	-	-	48.5	-	49.0
5.	99	48.8	62.4	-	44.4	-	40.8	-	-	50.2	-	48.0
6.	62	51.0	68.5	-	44.7	-	42.0	-	-	-	51.3	53.4
7.	49	50.8	67.3	-	51.3	-	47.4	-	-	-	53.1	52.0
8.	30	51.3	68.5	-	53.2	-	48.1	-	-	-	55.1	53.1
9.	55	51.8	64.4	-	48.1	-	-	-	64.4	53.0	-	53.4
10.	101	49.7	59.7	-	43.6	-	-	-	52.0	48.0	-	45.7
11.	84	50.0	-	58.6	46.5	-	47.1	-	-	-	55.4	53.5
12.	42	49.8	-	59.6	49.4	-	47.2	-	-	-	55.2	55.4
13.	75	60.1	-	62.0	49.7	-	49.6	-	-	-	51.9	53.5
14.	116	56.2	-	60.9	50.9	-	47.6	-	-	-	53.2	53.2
15.	196	52.2	-	57.6	46.2	-	44.5	-	-	50.0	-	50.0
16.	141	52.0	-	58.0	47.9	-	45.9	-	-	50.5	-	53.0
17.	32	52.6	-	62.2	46.1	-	-	-	58.8	54.6	-	55.6

APPENDIX A.

Table No. II - 1 (b).

Mean achievements of the students for each subject at the Intermediate Examination for Category No. 2.

No. of Group.	No. of candidates	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	EY
1	210	39.4	52.7	44.0	40.4	-	-	-	-	-	-	43.4
2.	286	35.5	56.4	35.5	39.4	-	-	-	-	-	-	39.4
3.	118	32.1	-	-	-	39.1	-	-	-	38.4	-	35.8
4.	110	28.6	-	-	-	-	-	42.3	-	40.0	-	37.5
5.	99	37.0	-	-	-	-	41.1	-	-	37.8	-	36.1
6.	62	38.1	-	-	-	43.0	-	-	-	-	45.1	37.4
7.	49	38.9	-	-	-	-	-	44.0	-	-	41.8	38.7
8.	30	28.1	-	-	-	-	43.6	-	-	-	44.8	39.5
9.	55	32.5	-	-	-	-	-	37.7	61.6	-	-	46.0
10.	101	31.9	46.1	-	-	-	-	-	56.7	-	-	41.4
11.	84	33.2	-	-	-	-	-	43.4	-	-	44.7	35.6
12.	42	34.1	-	-	-	43.8	-	-	-	-	42.8	41.8
13.	75	29.3	-	-	-	-	42.1	-	-	-	46.1	38.0
14.	116	30.1	-	-	-	39.1	-	-	-	-	42.8	38.7
15.	196	32.6	-	-	-	-	36.8	-	-	43.3	-	40.4
16.	141	31.2	-	-	-	-	41.0	-	-	44.0	-	38.8
17.	32	31.0	-	-	-	-	-	-	66.2	-	-	47.0

APPENDIX A.

Table No.II - 2 (a).

Standard Deviation in the achievements of the students at Matriculation Examination for Category No.2.

No. of candidates.	X1	X2	X3	X4	X5	X6	X7	X8	X9	X10	EX
210	9.1	12.6	-	9.4	9.0	-	12.7	-	-	-	9.5
286	23.2	25.2	-	19.3	17.2	-	-	-	16.2	-	21.2
118	4.2	18.6	-	14.2	-	8.6	-	-	6.3	-	11.7
110	19.6	27.3	-	7.2	-	11.3	-	-	15.3	-	16.4
99	15.2	8.6	-	7.5	-	8.6	-	-	6.9	-	13.4
62	17.3	13.2	-	10.3	-	9.6	-	-	-	11.3	13.2
49	15.6	13.6	-	7.3	-	13.3	-	-	-	8.3	9.8
--	9.7	15.6	-	12.3	-	16.3	-	-	-	14.6	11.4
55	18.6	17.6	-	14.2	-	-	-	11.6	16.2	-	11.3
101	11.2	13.2	-	8.6	-	-	-	10.3	9.6	-	11.6
84	8.3	-	15.3	9.7	-	7.1	-	-	-	4.3	10.3
42	7.6	-	8.9	9.3	-	7.2	-	-	-	13.6	11.2
75	9.7	-	16.3	10.6	-	6.7	-	-	-	8.3	9.3
116	7.6	-	16.1	11.0	-	6.8	-	-	-	9.8	13.2
196	11.3	-	14.2	9.2	-	7.2	-	-	4.6	-	6.4
141	13.2	-	16.7	10.3	-	8.1	-	-	6.1	-	8.9
32	12.6	-	15.6	10.2	-	-	-	6.3	5.6	-	7.4

APPENDIX A.

Table No. II - 2 (b).

Standard Deviation in the achievements of the students at Intermediate Examination for Category No. 2.

No. of Group	No. of candidates.	Y1	Y2	Y3	Y4	Y5	Y6	Y7	Y8	Y9	Y10	EY
1.	210	3.1	6.2	18.9	19.3	-	-	-	-	-	-	5.3
2.	286	17.8	32.6	25.3	29.6	-	-	-	-	-	-	25.0
3.	118	7.4	-	-	-	5.6	-	-	-	7.1	-	6.1
4.	110	11.6	-	-	-	-	-	7.2	-	13.2	-	7.7
5.	99	7.3	-	-	-	-	6.2	-	-	11.3	-	14.6
6.	62	5.2	-	-	-	10.5	-	-	-	-	11.4	9.6
7.	49	3.2	-	-	-	-	-	7.6	-	-	12.8	6.7
8.	30	2.6	-	-	-	-	11.7	-	-	-	7.6	3.8
9.	55	6.8	-	-	-	-	-	9.7	8.9	-	-	9.2
10.	101	8.2	-	-	-	12.4	-	-	15.2	-	-	6.7
11.	84	3.2	-	-	-	-	-	7.6	-	-	5.6	8.3
12.	42	5.6	-	-	-	7.6	-	-	-	-	8.2	4.6
13.	75	3.2	-	-	-	-	6.3	-	-	-	7.4	5.3
14.	116	7.3	-	-	-	4.6	-	-	-	-	5.2	4.1
15.	196	5.2	-	-	-	-	13.2	-	-	6.2	[illegible]	3.2
16.	141	6.2	-	-	-	-	7.3	-	-	8.4	-	7.4
17.	32	3.2	-	-	-	-	-	-	11.2	-	-	6.4

	X1	X2	X4	X5	X7	EX	Y1	Y2	Y 3	Y4	EY	Z1	Z3	Z4	EZ
Engl X1	-														
Maths X2	.51	-													
[illegible] X4	.41	.40	-												
X5 [illegible]	.23	.54	.59	-											
X7 Draw	.16	.71	.52	.41	-										
EX	.61	.66	.49	.30	.26	-									
Engl Y1	.61	.55	.59	.62	.69	.62	-								
Maths Y2	.41	.43	.52	.66	.64	.71	.17	-							
Y3 [illegible]	[illegible]	.73	.42	.62	.71	.69	.11	.51	-						
Y4 Relig.	.71	.61	.69	.44	.49	.50	.21	.41	.62	-					
EY	.49	.55	.54	.57	.62	.61	.31	.42	.60	.61	-				
Z1 Eng	.52	.79	.72	.71	.63	.51	.61	.53	.50	.71	.61	-			
Z3 Maths A	.53	.59	.55	.54	.53	.41	.51	.41	.70	.61	.59	.41	-		
Z4 [illegible]	.54	.60	.70	.69	.58	.39	.61	.82	.81	.64	.51	.39	.50	-	
EZ	.24	.27	.21	.40	.31	.57	.31	.32	.39	.40	.54	.61	.52	.41	-

III

	X1	X2	X4	X5	X9	EX	Y1	Y2	Y3	Y4	EY	Z2	Z5	Z6	EZ
X1 [illegible]	-														
X2 [illegible]	.71	-													
X4 [illegible]	.62	.59	-												
X5 Phy. & Chy.	.61	.72	.89	-											
X9 Hindi	.52	.59	.41	.23	-										
EX	.51	.52	.63	.41	.49	-									
Y1 Eng.	.61	.49	.51	.79	.49	.51	-								
Y2 Maths	.52	.69	.64	.81	.73	.53	.28	-							
Y3 Chem	.55	.57	.62	.88	.63	.47	.26	.75	-						
Y4 Phy.	.33	.91	.51	.79	.71	.51	.29	.62	.85	-					
EY	.41	.43	.39	.52	.56	.62	.51	.63	.57	.72	-				
Z2 Maths	.71	.81	.72	.84	.81	.53	.72	.52	.61	.64	.61	-			
Z5 Chem	.52	.61	.72	.51	.51	.41	.41	.39	.47	.42	.67	.52	-		
Z6 Phy.	.52	.53	.63	.41	.69	.50	.71	.91	.82	.83	.71	.71	.69	-	
EZ	.31	.57	.42	.41	.55	.65	.41	.43	.51	.50	.71	.70	.51	.41	-

IV

	X1	X2	X4	X5	X9	EX	Y1	Y2	Y3	Y4	EY	Z1	Z3	Z4	EZ
X1	-														
X2	.51	-													
X4	.29	.64	-												
X5	.41	.71	.42	-											
X9	.51	.9 1	.32	.49	-										
EX	.91	.59	.61	.71	.20	-									
Y1	.51	.84	.69	.41	.55	.56	-								
Y2	.61	.51	.53	.49	.52	.50	.51	-							
Y3	.62	.60	.52	.59	.51	.41	.40	.62	-						
Y4	.60	.71	.53	.51	.41	.41	.29	.64	.71	-					
EY	.61	.63	.65	.51	.40	.73	.42	.51	.72	.51	-				
Z1	.59	.60	.62	.71	.41	.51	.72	.54	.53	.52	.61	-			
Z3	.46	.70	.69	.51	.52	.52	.51	.41	.42	.81	.62	.41	-		
Z4	.39	.65	.60	.59	.47	.53	.43	.42	.51	.91	.67	.34	.89	-	
EZ	.51	.53	.37	.39	.47	.69	.50	.41	.36	.37	.72	.39	.45	.32	-

√

	X1	X2	X4	X5	X10	EX	Y1	Y2	Y3	Y4	EY	Z2	Z5	Z6	EZ
X1	-														
X2	.54	-													
X4	.42	.42	-												
X5	.34	.40	.59	-											
X10	.51	.57	.55	.59	-										
EX	.43	.63	.59	.41	.57	-									
Y1	.53	.51	.69	.62	.67	.54	-								
Y2	.57	.63	.61	.69	.51	.55	.44	-							
Y3	.71	.73	.79	.61	.64	.56	.52	.59	-						
Y4	.42	.61	.59	.54	.65	.49	.31	.61	.62	-					
EY	.54	.57	.60	.61	.57	.53	.51	.53	.44	.49	-				
Z2	.41	.43	.47	.61	.42	.51	.43	.54	.57	.56	.48	-			
Z5	.64	.61	.53	.60	.56	.47	.43	.43	.51	.71	.49	.43	-		
Z6	.51	.71	.62	.69	.65	.45	.64	.57	.53	.70	.52	.59	.61	-	
EZ	.52	.53	.41	.43	.44	.52	.45	.46	.47	.57	.69	.54	.51	.42	-

Table No.1.5. Intermediate and [illegible]

√1

	X1	X2	X4	X5	X8	EX	Y1	Y2	Y3	Y4	EY	Z2	Z5	Z6	EZ
X1	-														
X2	.43	-													
X4	.31	.36	-												
X5	.32	.41	.55	-											
X8	.25	.52	.21	.38	-										
EX	.42	.34	.52	.61	.5 9	-									
Y1	.53	.47	.46	.48	.39	.57	-								
Y2	.58	.57	.59	.92	.57	.53	.50	-							
Y3	.59	.51	.61	.59	.61	.52	.41	.43	-						
Y4	.47	.61	.48	.49	.57	.50	.39	.61	.67	-					
EY	.41	.32	.57	.36	.47	.57	.49	.39	.21	.24	-				
Z2	.51	.71	.73	.61	.45	.46	.49	.44	.46	.48	.57	-			
Z5	.49	.48	.47	.59	.53	.61	.32	.58	.52	.44	.32	.59	-		
Z6	.51	.67	.55	.56	.57	.47	.61	.45	.46	.70	.37	.42	.51	-	
EZ	.43	.44	.43	.47	.52	.62	.53	.43	.44	.37	.57	.49	.41	.51	-

Intermediate and Degree

VII

	X1	X2	X4	X6	X9	EX	Y1	Y5	Y9	EY	Z1	Z7	EZ
X1	-												
X2	.73	-											
X4	.51	.29	-										
X6	.42	.42	.52	-									
X9	.51	.34	.59	.83	-								
EX	.51	.21	.61	.67	.62	-							
Y1	.58	.43	.47	.48	.47	.59	-						
Y5	.54	.57	.55	.56	.59	.48	.58	-					
Y9	.66	.65	.64	.63	.61	.47	.51	.43	-				
EY	.51	.53	.31	.37	.48	.38	.34	.51	.53	-			
Z1	.76	.61	.52	.55	.54	.46	.62	.53	.46	.43	-		
Z7	.61	.89	.53	.49	.57	.45	.67	.39	.47	.58	.32	-	
EZ	.65	.54	.56	.64	.61	.49	.53	.51	.41	.54 ~~[illegible]~~	.40	.51	-

Table No. 1.8. Co-efficient of correlation among the subjects of Matriculation, Intermediate and Degree Examinations for Group No.8. N = 58.

VIII

	X1	X2	X4	X6	X9	EX	Y1	Y7	Y9	EY	Z1	Z9	EZ
X1	-												
X2	.73	-											
X4	.51	.62	-										
X6	.29	.40	.49	-									
X9	.43	.59	.39	.21	-								
EX	.32	.39	.45	.46	.19	-							
Y1	.68	.72	.49	.71	.81	.51	-						
Y7	.62	.61	.29	.71	.89	.51	.19	-					
Y9	.65	.71	.45	.65	.52	.52	.21	.19	-				
EY	.65	.55	.43	.41	.52	.46	.52	.31	.61	-			
Z1	.49	.38	.45	.43	.41	.39	.32	.52	.41	.53	-		
Z9	.34	.32	.41	.41	.40	.47	.51	.41	.32	.71	.33	-	
EZ	.49	.55	.46	.59	.61	.52	.71	.51	.62	.65	.69	.65	-

IX

	X1	X2	X4	X6	X9	EX	Y1	Y6	Y9	EY	Z1	Z8	EZ
X1	-												
X2	.41	-											
X4	.55	.21	-										
X6	.32	.22	.31	-									
X9	.51	.30	.43	.53	-								
EX	.47	.69	.38	.61	.22	-							
Y1	.53	.59	.61	.71	.73	.42	-						
Y6	.60	.59	.42	.52	.50	.41	.32	-					
Y9	.62	.67	.69	.52	.56	.51	.42	.51	-				
EY	.51	.57	.49	.45	.41	.57	.31	.42	.31	-			
Z1	.41	.61	.45	.59	.53	.33	.49	.54	.25	.57	-		
Z8	.71	.72	.43	.60	.52	.31	.41	.52	.49	.51	.29	-	
EZ	.54	.51	.34	.31	.40	.51	.51	.72	.71	.42	.51	.40	-

Table No. Intermediate and Degree Examination for Group No.

X

	X1	X2	X4	X6	X10	EX	Y 1	Y5	Y10	EY	Z1	Z7	EZ
X1	-												
X2	.51	-											
X4	.47	.45	-										
X6	.79	.15	.33	-									
X10	.41	.51	.52	.63	-								
EX	.39	.32	.47	.47	.57	-							
Y1	.50	.51	.56	.51	.53	.51	-						
Y5	.51	.39	.59	.45	.43	.43	.41	-					
Y10	.57	.58	.63	.71	.79	.47	.47	.56	-				
EY	.56	.55	.54	.53	.52	.61	.51	.34	.39	-			
Z1	.74	.61	.63	.64	.59	.49	.47	.51	.31	.64	-		
Z7	.51	.47	.52	.63	.63	.51	.61	.71	.39	.63	.41	-	
EZ	.61	.57	.58	.41	.43	.52	.45	.45	.49	.59	.57	.49	-

Intermediate and Degree Examination for Group No. II

XI

	X1	X2	X4	X6	X10	EX	Y1	Y7	Y10	EY	Z1	Z9	EZ
X1	-												
X2	.51	-											
X4	.61	.51	-										
X6	.18	.45	.40	-									
X10	.53	.55	.61	.27 ✓	-								
EX	.55	.53	.42	.32	.63	-							
Y1	.37	.41	.59	.71	.49	.53	-						
Y7	.71	.61	.49	.57	.47	.51	.51	-					
Y10	.61	.51	.43	.49	.81	.64	.61	.51	-				
EY	.56	.55	.54	.53	.44	.57	.61	.53	.46	-			
Z1	.43	.61	.71	.52	.57	.63	.52	.51	.56	.48	-		
Z9	.51	.43	.51	.53	.41	.61	.50	.57	.64	.47	.61	-	
EZ	.49	.47	.56	.71	.73	.56	.64	.51	.54	.46	.42	.54	-

Intermediate and Degree Examinations for Group No.

XII

	X1	X2	X4	X7	X9	EX	Y1	Y5	Y9	EY	Z1	Z7	EZ
X1	-												
X2	.52	-											
X4	.41	.53	-										
X7	.62	.69	.45	-									
X9	.29	.32	.34	.50	-								
EX	.41	.42	.37	.07	.43	-							
Y1	.42	.51	.52	.51	.29 ✓	.49	-						
Y5	.45	.49	.51	.61	.42	.57	.44	-					
Y9	.46	.45	.51	.71	.63	.58	.52	.42	-				
EY	.50	.47	.52	.55	.61	.56	.34	.25	.49	-			
Z1	.41	.49	.51	.53	.23	.59	.51	.61	.63	.57	-		
Z7	.39	.49	.55	.55	.29	.63	.67	.42	.65	.59	.59	-	
EZ	.51	.47	.51	.43	.44	.61	.39	.51	.57	.67	.54	.52	-

XIII

Table No. 1.13. Co-efficient of correlation among the subjects of Matriculation, Intermediate and Degree Examinations for Group No. 13. N = 24.

	X1	X2	X4	X8	X9	EX	Y1	Y2	Y8	EY	Z1	Z3	Z4	EZ
X1	-													
X2	.59	-												
X4	.71	.42	-											
X8	.52	.32	.36	-										
X9	.62	.41	.31	.29	-									
EX	.42	.59	.41	.26	.29	-								
Y1	.52	.57	.47	.59	.61	.59	-							
Y2	.64	.65	.51	.65	.63	.44	.69	-						
Y8	.69	.58	.41	.39	.71	.51	.62	.39	-					
EY	.51	.71	.52	.41	.43	.42	.34	.51	.42	-				
Z1	.42	.39	.59	.44	.45	.69	.34	.46	.59	.41	-			
Z3	.35	.61	.44	.57	.63	.47	.71	.71	.61	.37	.34	-		
Z4	.47	.62	.51	.59	.61	.51	.64	.54	.39	.51	.32	.76	-	
EZ	.41	.51	.70	.41	.61	.77	.61	.71	.89	.59	.47	.63	.71	-

XIV

	X1	X2	X4	X8	X9	EX	Y1	Y5	Y8	EY	Z1	Z7	EZ
X1	- =												
X2	.56	-											
X4	.57	.41	-										
X8	.45	.62	.51	-									
X9	.29	.31	.42	.51	-								
EX	.41	.52	.57	.41	.31	-							
Y1	.53	.52	.59	.55	.42	.61	-						
Y5	.42	.61	.61	.62	.43	.59	.32	-					
Y8	.45	.43	.51	.32	.65	.53	.42	.56	-				
EY	.43	.41	.63	.71	.62	.52	.34	.51	.59	-			
Z1	.42	.51	.45	.43	.41	.52	.51	.49	.62	.61	-		
Z7	.43	.44	.51	.52	.53	.51	.51	.59	.56	.56	.49	-	
EZ	.49	.44	.32	.39	.37	.42	.42	.51	.71	.56	.61	.57	-

XV

Table No. 1.15. Co-efficient of correlation among the subjects of Matriculation, Intermediate & Degree Examinations for Group No. 15. N = 32.

	X1	X2	X4	X8	X9	EX	Y1	Y7	Y8	EY	Z1	Z9	EZ
X1	-												
X2	.59	-											
X4	.41	.53	-										
X8	.65	.39	.42	-									
X9	.76	.23	.55	.83	-								
EX	.63	.61	.52	.67	.51	-							
Y1	.48	.47	.49	.51	.45	.59	-						
Y7	.41	.52	.51	.51	.39	.53	.42	-					
Y8	.47	.49	.51	.51	.61	.67	.51	.52	-				
EY	.47	.69	.62	.61	.57	.55	.39	.29	.42	-			
Z1	.59	.49	.58	.53	.54	.67	.54	.47	.41	.38	-		
Z9	.59	.71	.21	.56	.71	.68	.39	.57	.54	.57	.41	-	
EZ	.49	.59	.61	.62	.63	.47	.43	.45	.49	.52	.40	.51	-

XVI

Intermediate and Degree Examinations for Group

	X1	X3	X4	X6	X10	EX	Y1	Y7	Y10	EY	Z1	Z9	EZ
X1	-												
X3	.50	-											
X4	.23 ✓	.40	-										
X6	.49	.19 ✓	.38	-									
X10	.50	.22 ✓	.31	.41	-								
EX	.25 ✓	.50	.59	.34	.37	-							
Y1	.61	.41	.43	.49	.50	.62	-						
Y7	.47	.49	.46	.45	.47	.63	.30	-					
Y10	.49	.40	.51	.53	.62	.67	.44	.37	-				
EY	.57	.59	.56	.55	.54	.59	.59	.43	.38	-			
Z1	.53	.55	.5 3	.50	.40	.68	.61	.51	.50	.53	-		
Z9	.56	.41	.57	.58	.59	.69	.62	.57	.67	.51	.45	-	
EZ	.56	.49	.47	.48	.49	.51	.51	.54	.44	.61	.51	.44	-

XVII

	X1	X3	X4	X6	X10	EX	Y1	Y5	Y10	EY	Z1	Z7	EZ
X1	-												
X3	.40	-											
X4	.42	.43	-										
X6	.68	.89	.38	-									
X10	.32	.35	.49	.35	-								
EX	.41	.51	.39	.61	.29	-							
Y1	.42	.49	.50	.59	.52	.25	-						
Y5	.51	.41	.40	.43	.32	.31	.45	-					
Y10	.52	.53	.41	.43	.69	.43	.50	.12	-				
EY	.59	.21	.61	.69	.51	.23	.30	.22	.33	-			
Z1	.52	.42	.41	.39	.31	.52	.42	.52	.51	.46	-		
Z7	.43	.39	.59	.52	.31	.59	.39	.51	.52	.54	.61	-	
EZ	.52	.69	.63	.51	.42	.43	.51	.53	.42	.42	.54	.52	-

XVIII

Table No. 1.18. Co-efficient of correlation among the subjects of Matriculation, Intermediate & Degree Examinations for Group No. 18. N = 45.

	X1	X3	X4	X6	X10	EX	Y1	Y6	Y10	EY	Z1	Z8	EZ
X1	-												
X3	.39	-											
X4	.51	.42	-										
X6	.34	.51	.52	-									
X10	.39	.29	.50	.60	-								
EX	.51	.41	.37	.41	.59	-							
Y1	.59	.61	.57	.69	.51	.41	-						
Y6	.71	.59	.71	.62	.61	.51	.61	-					
Y10	.73	.73	.61	.43	.63	.59	.41	.51	-				
EY	.59	.61	.50	.81	.71	.51	.51	.45	.51	-			
Z1	.57	.61	.43	.47	.53	.61	.61	.31	.42	.67	-		
Z8	.81	.91	.55	.71	.39	.71	.54	.57	.59	.72	.41	-	
EZ	.53	.67	.61	.81	.39	.41	.42	.46	.48	.52	.49	.32	-

Table No. I.19. Intermediate and Degree Examinations for Group No.19. N = 76.

XIX

	X1	X3	X4	X6	X9	EX	Y1	Y5	Y9	EY	Z1	Z7	EZ
X1	-												
X3	.44	-											
X4	.19	.42	-										
X6	.52	.31	.39	-									
X9	.50	.49	.36	.39	-								
EX	.52	.32	.59	.29	.57	-							
Y1	.61	.71	.41	.62	.61	.61	-						
Y5	.81	.53	.50	.89	.84	.69	.41	-					
Y9	.56	.55	.41	.43	.61	.66	.51	.42	-				
EY	.59	.47	.48	.49	.51	.59	.51	.32	.21	-			
Z1	.54	.45	.50	.52	.64	.69	.49	.71	.21	.31	-		
Z7	.51	.41	.52	.54	.56	.51	.61	.59	.64	.45	.32	-	
EZ	.53	.51	.49	.52	.59	.46	.53	.61	.47	.65	.42	.41	-

XX

	X1	X3	X4	X6	X9	EX	Y1	Y7	Y9	EY	Z1	Z9	EZ
X1	-												
X3	.61	-											
X4	.44	.25 ✓	-										
X6	.55	.42	.39	-									
X9	.44	.59	.31	.17 ✓	-								
EX	.44	.39	.69	.21 ✓	.19	-							
Y1	.50	.51	.53	.54	.57	.39	-						
Y7	.31	.32	.42	. 51	.55	.37	.19 ✓	-					
Y9	.37	.35	.36	.51	.52	.47	.45	.51	-				
EY	.55	.56	.57	.59	.56	.51	.43	.57	.39	-			
Z1	.61	.67	.58	.51	.59	.45	.58	.41	.47	.57	-		
Z9	.51	.31	.51	.52	.51	.55	.47	.59	.46	.51	.41	-	
EZ	.56	.54	.49	.43	.58	.42	.59	.61	.54	.60	.49	.39	-

Table No. 1.22.

Intermediate and Degree Examinations for Group No.22. N = 64.

XXII

	X1	X3	X4	X8	X9	EX	Y1	Y8	EY	Z1	Z10	EZ
X1	-											
X3	.71	-										
X4	.61	.53	-									
X8	.57	.61	.52	-								
X9	.47	.61	.5 3	.81	-							
EX	.61	.64	.50	.51	.53	-						
Y1	.62	.60	.41	.74	.73	.54	-					
Y8	.58	.57	.56	.55	.53	.55	.51	-				
EY	.43	.48	.49	.58	.47	.63	.57	.56	-			
Z1	.63	.71	.51	.51	.39	.61	.47	.51	.56	-		
Z10	.58	.57	.56	.58	.42	.64	.62	.61	.53	.55	-	
EZ	.47	.43	.51	.61	.71	.53	.73	.52	.55	.54	.54	-

XXIII

	X1	X2	X4	X5	X7	EX	Y1	Y2	Y3	Y4	EY
X1	-										
X2	.43	-									
X4	.44	.46	-								
X5	.38	.36	.29 ✓	-							
X7	.29 ✓	.41	.52	.56	-						
EX	.47	.32	.56	.43	.51	-					
Y1	.26 ✓	.36	.51	.41	.63	.47	-				
Y2	.35	.41	.53	.41	.54	.52	.23	-			
Y3	.26 ✓	.33	.41	.51	.56	.54	.42	.39	-		
Y4	.31	.39	.70	.69	.39	.36	.31	.41	.42	-	
EY	.45	.43	.39	.50	.61	.62	.42	.38	.51	.49	-

Intermediate [illegible] Examinations for the group No. 2. N = 286.

XXIV

	X1	X2	X4	X5	X9	EX	Y1	Y2	Y3	Y4	EY
X1	-										
X2	.51	-									
X4	.59	.44	-								
X5	.21 ✓	.49	.44	-							
X9	.34	.63	.39	.49	-						
EX	.67	.39	.31	.51	.30	-					
Y1	.31	.63	.62	.38	.46	.39	-				
Y2	.39	.36	.33	.32	.71	.40	.41	-			
Y3	.42	.40	.32	.51	.43	.51	.29	.37	-		
Y4	.48	.53	.32	.39	.40	.46	.46	.35	.42	-	
EY	.41	.47	.45	.39	.44	.33	.34	.29 ✓	.36	.37	-

and Intermediate Examination for Group No. 3.   N = 118.

XXV

	X1	X2	X4	X6	X9	EX	Y1	Y5	Y9	EY
X1	-									
X2 Maths·	.43	-								
X4 Hist & Geog	.21	.32	-							
X6	.49	.59	.32	-						
X9 Hindi	.33	.29 ✓	.26 ✓	.48	-					
EX	.51	.32	.45	.24 ✓	.21 ✓	-				
Y1	.48	.41	.52	.51	.61	.31	-			
Y5	.42	.31	.36	.41	.32	.29 ✓	.26 ✓	-		
Y9	.35	.38	.26 ✓	.35	.49	.32	.29 ✓	.31	-	
EY	.35	.43	.33	.39	.48	.46	.32	.36	.33	-

XXVI

Table No. 11[illegible]. Co-efficient of correlation between the subjects of Matriculation and Intermediate Examinations for Group No.4. N = 110.

	X1	X2	X4	X6	X9	EX	Y1	Y7	Y9	EY
X1	-									
X2	.39	-								
X4	.55	.49	-							
X6	.38	.24 ✓	.29 ✓	-						
X9	.52	.38	.48	.26 ✓	-					
EX	.46	.53	.38	.37	.22 ✓	-				
Y1	.33	.47	.41	.34	.36	.26 ✓	-			
Y7	.40	.39	.32	.49	.39	.29 ✓	.22 ✓	-		
Y9	.42	.34	.29 ✓	.52	.43	.41	.37	.36	-	
EY	.51	.47	.39	.31	.37	.47	.22 ✓	.21 ✓	.39	-

and Intermediate Examinations for Group No. 5. N = 39.

XXVII

	X1	X2	X4	X6	X9	EX	Y1	Y6	Y9	EY
X1	-									
X2	.43	-								
X4	.31	.37	-							
X6	.30	.45	.46	-						
X9	.37	.29✓	.52	.37	-					
EX	.47	.39	.47	.43	.24✓	-				
Y1	.38	.47	.37	.51	.36	.48	-			
Y6	.34	.36	.35	.34	.46	.36	.38	-		
Y9	.46	.45	.46	.49	.51	.27✓	.37	.42	-	
EY	.39	.36	.43	.33	.41	.32	.39	.41	.46	-

XXVIII

	X1	X2	X4	X6	X10	EX	Y1	Y5	Y10	EY
X1	-									
X2	.39	-								
X4	.37	.49	-							
X6	.49	.46	.38	-						
X10	.26 ✓	.28 ✓	.41	.46	-					
EX	.41	.46	.39	.29 ✓	.37	-				
Y1	.35	.49	.41	.47	.36	.49	-			
Y5	.31	.56	.59	.50	.61	.41	.29	-		
Y10	.43	.61	.61	.49	.46	.47	.34	.51	-	
EY	.51	.37	.47	.41	.49	.49	.46	.39	.61	-

XXIX

	X1	X2	X4	X6	X10	EX	Y1	Y7	Y10	EY
X1	-									
X2	.47	-								
X4	.55	.46	-							
X6	.46	.51	.23 ✓	-						
X10	.42	.49	.56	.33	-					
EX	.61	.53	.48	.39	.55	-				
Y1	.41	.31	.51	.53	.43	.47	-			
Y7	.62	.58	.39	.51	.39	.46	.43	-		
Y10	.63	.43	.38	.54	.63	.54	.58	.48	-	
EY	.52	.51	.48	.46	.38	.49	.61	.49	.39	-

XXX

	X1	X2	X4	X6	X10	EX	Y1	Y6	Y10	EY
X1	-									
X2	.41	-								
X4	.48	.51	-							
X6	.31	.42	.26 ✓	-						
X10	.53	.39	.48	.27 ✓	-					
EX	.69	.46	.38	.35	.42	-				
Y1	.51	.46	.59	.47	.48	.53	-			
Y6	.56	.49	.43	.38	.46	.51	.42	-		
Y10	.61	.46	.42	.49	.56	.59	.50	.43	-	
EY	.51	.62	.54	.56	.43	.53	.46	.49	.52 ~~52~~	-

XXXI

	X1	X2	X4	X8	X9	EX	Y1	Y7	Y8	EY
X1	-									
X2	.43	-								
X4	.32	.41	-							
X8	.49	.32	.39	-						
X9	.56	.26	.46	.63	-					
EX	.41	.53	.42	.51	.41	-				
Y1	.56	.51	.47	.45	.39	.61	-			
Y7	.38	.42	.39	.46	.23 ✓	.36	.33	-		
Y8	.52	.58	.49	.67	(.71)	(.79)	.47	.49	-	
EY	.53	.62	.53	.49	.61	.56	.43	.26 ✓	.29 ✓	-

XXXII

	X1	X2	X4	X8	X9	EX	Y1	Y5	Y8	EY
X1	-									
X2	.47	-								
X4	.51	.36	-							
X8	.39	.50	.48	-						
X9	.27	.39	.46	.49	-					
EX	.49	.47	.53	.36	.42	-				
Y1	.49	.43	.39	.42	.36	.52	-			
Y5	.46	.49	.51	.55	.57	.59	.41	-		
Y8	.42	.44	.53	.44	.56	.55	.32	.49	-	
EY	.34	.43	.57	.47	.51	.56	.47	.53	.51	-

XXX

	X1	X3	X4	X6	X10	EX	Y1	Y 7	Y10	EY
X1	-									
X3	.29	-								
X4	.43	.47	-							
X6	.26 ✓	.42	.29	-						
X10	.48	.36	.46	.31						
EX	.47	.41	.41	.42	.67	-				
Y1	.29 ✓	.28	.47	.56	.61	.46	-			
Y7	.47	.46	.33	.51	.42	.53	.61	-		
Y10	.35	.33	.49	.39	.63	.57	.56	.49	-	
EY	.46	.41	.46	.52	.39	.52	.53	.55	.43	-

of Matriculation
and Intermediate Examinations for Group No. 12. N = 42.

	X1	X3	X4	X6	X1 0	EX	Y1	Y5	Y10	EY
X1	-									
X3	.36	-								
X4	.45	.51	-							
X6	.59	.61	.36	-						
X10	.27 ✓	.27	.41	.38	-					
EX	.46	.38	.46	.51	.36	-				
Y1	.47	.46	.56	.52	.49	.39	-			
Y5	.58	.36	.41	.48	.44	.41	.47	-		
Y10	.54	.57	.37	.51	.58	.51	.51	.26 ✓	-	
EY	.53	.41	.56	.49	.46	.36	.31	.31	.21 ✓	-

Table No. [illegible] [illegible] of Matriculation
and Intermediate Examination for Group No.13. N = 75.

XXXV

	X1	X3	X4	X6	X10	EX	Y1	Y6	Y10	EY
X1	-									
X3	.36	-								
X4	.47	.38	-							
X6	.31	.41	.49	-						
X10	.49	.36	.41	.39	-					
EX	.56	.33	.29 ✓	.53	.49					
Y1	.42	.63	.62	.61	.43	.66	-			
Y6	.69	.43	.62	.39	.46	.49	.53	-		
Y10	.62	.56	.51	.45	.63	.55	.39	.36	-	
EY	.52	.59	.51	.59	.62	.49	.41	.47	.39	-

Table No. [illegible] [illegible] subjects of Matriculation
and Intermediate EXAMINATIONS for Group No. 14. N = 116.

	X1	X3	X4	X6	X10	ΣX	Y1	Y5	Y10	ΣX
X1	-									
X3	.38	-								
X4	.26	.38	-							
X6	.46	.46	.39	-						
X10	.39	.45	.32	.31	-					
ΣX	.53	.35	.51	.48	.43	-				
Y1	.49	.53	.56	.61	.56	.61	-			
Y5	.67	.49	.42	.51	.62	.53	.46	-		
Y10	.54	.62	.43	.47	.59	.53	.43	.39	-	
ΣY	.52	.42	.49	.52	.56	.51	.47	.46	.43	-

Table No. 11.15. Co-efficient of correlation between the subjects of Matriculation and Intermediate Examinations for Group No. 15. N = 196.

	X1	X3	X4	X6	X9	EX	Y1	Y6	Y9	EY
X1	-									
X3	.49	-								
X4	.36	.39	-							
X6	.49	.46	.26 ✓	-						
X9	.42	.51	.31	.29 ✓	-					
EX	.39	.48	.51	.37	.43	-				
Y1	.43	.41	.44	.47	.49	.44	-			
Y6	.42	.46	.36	.31	.46	.49	.23 ✓	-		
Y9	.31	.39	.32	.49	.41	.46	.36	.43	-	
EY	.41	.46	.56	.46	.61	.52	.41	.61	.33	-

XX

and Intermediate Examinations for Group No.16. N = 141.

XXX

	X1	X3	X4	X6	X9	EX	Y1	Y6	Y9	EY
X1	-									
X3	.53	-								
X4	.39	.33	-							
X6	.41	.46	.29 ✓	-						
X9	.55	.59	.31	.39	-					
EX	.36	.51	.37	.36	.31	-				
Y1	.46	.39	.31	.42	.36	.31	-			
Y6	.46	.43	.36	.38	.51	.37	.33	-		
Y9	.41	.39	.31	.42	.51	.49	.36	.39	-	
EY	.51	.37	.52	.49	.60	.55	.49	.57	.43	-

and Intermediate Examinations for ~~[illegible]~~ Group No.17. N = 32.

XXXIX

	X1	X3	X4	X8	X9	EX	Y1	Y8	Y9	EY
X1	-									
X3	.63	-								
X4	.73 ~~[illegible]~~	.47	-							
X8	.51	.53	.49	-						
X9	.33	.56	.53	.69	-					
EX	.53	.57	.61	.66	.41	-				
Y1	.49	.46	.51	.76	.51	.69	-			
Y 8	.59	.53	.41	.83	.69	.56	.52	-		
Y9	.51	.61	.56	.63	.71	.53	.39	.49	-	
EY	.56	.48	.56	.65	.62	.51	.43	.51	-	-

N